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DR-374

November 1968.

AD

METEOROLOGICAL DATA REPORT

NIKE-HYDAC 9.5-68-5-604
(22 October 1968)

BY

LEN E. CARTER

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FORM NO.
DEC 16 1968
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ATMOSPHERIC SCIENCES RESEARCH OFFICE
WHITE SANDS MISSILE RANGE, NEW MEXICO

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UNITED STATES ARMY ELECTRONICS COMMAND

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METEOROLOGICAL DATA REPORT

NIKE-HYDAC 9.5-68-5-604
(22 October 1968)

By

Len E. Carter

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November 1968

DA Task 1T665702D127-02

ATMOSPHERIC SCIENCES RESEARCH OFFICE
WHITE SANDS MISSILE RANGE, NEW MEXICO

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ABSTRACT

Meteorological data gathered for the launching of Nike-Hydac 9.5-68-5-604 are presented for the Defense Atomic Support Agency, Sub-task 905, and for ballistic studies. The data appear, along with calculated ballistic data, in tabular form.

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INTRODUCTION

Nike-Hydac 9.5-68-5-604 was launched from LC-33, L-361, White Sands Missile Range (WSMR), New Mexico, at 0900 hours MDT, 22 October 1968.

Meteorological data used in conjunction with theoretical calculations to predict rocket impact were collected by the Meteorological Support Technical Area, U. S. Army Electronics Research and Development Activity, WSMR, New Mexico. The Ballistics Meteorologists for this firing were Len E. Carter and Harold M. Richart.

DISCUSSION

Wind data for the first 216 feet above the surface were obtained from a system composed of five Aerovanes mounted on a 200-foot tower and cabled to component wind indicators.

From 216 to 4,000 feet above the surface, wind data were obtained from T-9 Radar-tracked balloon ascents.

Temperature, pressure, and humidity data, along with upper wind data from 4,000 to 100,000 feet above the surface, were obtained from standard rawinsonde observations.

Mean wind component values in each ballistic zone were determined from vertical cross sections by the equal-area method.

Theoretical rocket performance values and wind-weighting values as a function of altitude were provided by the Meteorological Support Technical Area and are the basis for the data appearing in Table I.

| | | | |
|------------------------|----------|---------|--------------|
| PAYLOAD | | 400 | Pounds |
| CARTRIDGE DISPLACEMENT | WEIGHT | 2.8 | Miles |
| SECOND-STAGE IGNITION | TIME | 20.2 | Seconds |
| | ALTITUDE | 35,040 | Feet MSL |
| PEAK | TIME | 185 | Seconds |
| | ALTITUDE | 438,295 | Feet MSL |
| UNIT WIND EFFECT | HEAD | 1.7053 | Miles/MPH |
| | GROSS | 1.7707 | Miles/MPH |
| | TAIL | 1.7053 | Miles/MPH |
| TOWER TILT EFFECT | | 8.77 | Miles/Degree |

TABLE I. THEORETICAL ROCKET PERFORMANCE VALUES
NIKE-HYDAC 9.5-68-5-604

| LAYERS IN FEET ABOVE GROUND | BALLISTIC FACTORS |
|--------------------------------|----------------------|
| 11- 60 | .1617 |
| 60-108 | .0960 |
| 108-148 | .0639 |
| 148-184 | .0533 |
| 184-216 | .0377 |
| 216-300 | .0792 |
| 300-400 | .0666 |
| 400-600 | .0752 |
| 600-800 | .0542 |

| LAYERS IN FEET ABOVE GROUND | BALLISTIC FACTORS |
|--------------------------------|----------------------|
| 800- 1000 | .0325 |
| 1000- 1400 | .0516 |
| 1400- 2000 | .0503 |
| 2000- 2500 | .0276 |
| 2500- 3000 | .0178 |
| 3000- 3500 | .0057 |
| 3500- 4130 | .0040 |
| 4130-10000 | -.0135 |
| 10000-15000 | -.0106 |

| LAYERS IN FEET ABOVE GROUND | BALLISTIC FACTORS |
|--------------------------------|----------------------|
| 15000-20000 | -.0096 |
| 20000-25000 | -.0068 |
| 25000-31040 | -.0069 |
| 31040-36000 | .1055 |
| 36000-41000 | .0321 |
| 41000-46000 | .0126 |
| 46000-51000 | .0078 |
| 51000-56000 | .0067 |
| 56000-64400 | .0053 |

TABLE II. BALLISTIC FACTORS
NIKE-HYDAC 9.5-68-5-604

| AERO- VANE NO. * | MEAN WIND COMPONENTS IN MILES PER HOUR | | | | | | | | | |
|------------------------|--|------|---------------|-----|---------------|------|---------------|-------|---------------|------|
| | 1 0700 MDT | | 2 0730 MDT | | 3 0800 MDT | | 4 0815 MDT | | 5 0830 MDT | |
| | N-S | E-W | N-S | E-W | N-S | E-W | N-S | E-W | N-S | E-W |
| | | | | | | | | | | |
| 1 | 5.0N | 0.0 | 0.0 | 0.0 | 5.0N | 7.0E | 8.0N | 10.0E | 7.0N | 8.0E |
| 2 | 7.0 | 0.0 | 2.0N | 0.0 | 8.0 | 9.0 | 14.0 | 11.0 | 10.0 | 6.0 |
| 3 | 8.0 | 5.0E | 4.0 | 0.0 | 10.0 | 10.0 | 16.0 | 12.0 | 12.0 | 8.0 |
| 4 | 8.0 | 2.0 | 6.0 | 0.0 | 10.0 | 7.0 | 16.0 | 12.0 | 14.0 | 8.0 |
| 5 | 10.0 | 2.0 | 6.0 | 0.0 | 16.0 | 7.0 | 16.0 | 12.0 | 15.0 | 8.0 |

| AERO- VANE NO. * | MEAN WIND COMPONENTS IN MILES PER HOUR | | | | | | | |
|------------------------|--|------|---------------|------|---------------|------|-----|-----|
| | 6 0840 MDT | | 7 0850 MDT | | 8 0900 MDT | | | |
| | N-S | E-W | N-S | E-W | N-S | E-W | N-S | E-W |
| 1 | 11.0N | 9.0E | 5.0N | 9.0E | 11.0N | 9.0E | | |
| 2 | 12.0 | 11.0 | 8.0 | 12.0 | 12.0 | 10.0 | | |
| 3 | 13.0 | 10.0 | 10.0 | 13.0 | 13.0 | 9.0 | | |
| 4 | 14.0 | 9.0 | 10.0 | 13.0 | 14.0 | 8.0 | | |
| 5 | 16.0 | 9.0 | 11.0 | 13.0 | 15.0 | 8.0 | | |

TABLE III. ANEMOMETER WIND SPEED AND DIRECTION
NIKE-HYDAC 9.5-68-5-604

* Heights corresponding to Aerovane Numbers: 1 = 35 Feet 3 = 128 Feet 5 = 200 Feet
2 = 88 Feet 4 = 168 Feet

| LAYERS IN FEET ABOVE GROUND | MEAN WIND COMPONENTS IN MILES PER HOUR | | | | | | | | | |
|--------------------------------------|--|------|----------|------|----------|------|----------|-------|----------|------|
| | 1 | | 2 | | 3 | | 4 | | 5 | |
| | 0700 MDT | | 0730 MDT | | 0800 MDT | | 0815 MDT | | 0830 MDT | |
| | N-S | E-W | N-S | E-W | N-S | E-W | N-S | E-W | N-S | E-W |
| 21/- 300 | 11.0N | 2.0W | 6.0N | 0.0 | 16.0N | 6.5E | 14.0N | 11.0E | 15.0N | 8.0E |
| 300- 400 | 11.0 | 2.0 | 10.0 | 0.0 | 16.0 | 6.0 | 16.0 | 9.5 | 16.0 | 7.5 |
| 400- 600 | 12.0 | 4.0 | 12.0 | 3.5W | 18.0 | 5.0 | 22.0 | 8.0 | 22.0 | 8.0 |
| 600- 800 | 14.0 | 4.5 | 20.0 | 2.5E | 24.0 | 3.5 | 27.0 | 4.5 | 25.0 | 3.0 |
| 800-1000 | 18.0 | 5.5 | 24.5 | 1.0 | 29.0 | 0.5 | 31.0 | 3.0 | 28.0 | 4.5 |
| 1000-1400 | 23.0 | 5.5 | 26.0 | 1.0W | 25.0 | 3.0 | 25.0 | 2.0 | 29.0 | 1.0W |
| 1400-2000 | 26.0 | 1.0 | 24.0 | 2.0 | 21.0 | 2.5 | 18.0 | 1.5 | 18.0 | 1.0E |
| 2000-2500 | 26.0 | 5.0E | 23.5 | 3.0E | 18.0 | 6.0 | 16.0 | 4.5 | 17.0 | 2.5 |
| 2500-3000 | 25.0 | 9.0 | 21.0 | 8.0 | 15.0 | 9.0 | 12.0 | 7.5 | 15.0 | 5.5 |
| 3000-3500 | 20.0 | 9.5 | 17.0 | 8.0 | 14.0 | 8.5 | 12.0 | 9.5 | 10.0 | 6.5 |
| 3500-4000 | 15.0 | 3.0 | 14.0 | 7.5 | 10.0 | 3.5 | 12.0 | 7.5 | 9.0 | 8.0 |

TABLE IV. PILOT-BALLOON-MEASURED WIND DATA
NIKE-HYDAC 9.5-68+5-604

NOT REPRODUCIBLE

| LAYERS IN FEET ABOVE GROUND | MEAN WIND COMPONENTS IN MILES PER HOUR | | | | | | | | | |
|--------------------------------------|--|------|----------|-------|----------|------|-----|-----|-----|-----|
| | 6 | | 7 | | 8* | | | | | |
| | 0840 MDT | | 0850 MDT | | 0900 MDT | | | | | |
| | N-S | E-W | N-S | E-W | N-S | E-W | N-S | E-W | N-S | E-W |
| 216- 300 | 15.0N | 9.0E | 9.0N | 13.0E | 15.0N | 8.5E | | | | |
| 300- 400 | 16.0 | 7.0 | 7.0 | 13.0 | 16.0 | 9.5 | | | | |
| 400- 600 | 19.0 | 4.5 | 15.0 | 8.5 | 19.0 | 9.0 | | | | |
| 600- 800 | 21.0 | 3.5 | 18.0 | 5.0 | 20.0 | 7.0 | | | | |
| 800-1000 | 23.0 | 4.0 | 19.0 | 7.0 | 20.0 | 5.5 | | | | |
| 1000-1400 | 26.0 | 3.0 | 25.0 | 4.0 | 23.0 | 1.5 | | | | |
| 1400-2000 | 19.0 | 1.0 | 20.0 | 1.0 | 16.0 | 1.0N | | | | |
| 2000-2500 | 17.0 | 2.5 | 18.0 | 4.0 | 17.0 | 3.0E | | | | |
| 2500-3000 | 14.0 | 4.0 | 16.0 | 5.5 | 15.0 | 5.0 | | | | |
| 3000-3500 | 12.0 | 7.0 | 12.0 | 8.0 | 12.0 | 7.0 | | | | |
| 3500-4000 | 8.0 | 6.5 | 10.0 | 8.5 | 9.0 | 8.0 | | | | |

TABLE IV. PILOT-BALLOON-MEASURED WIND DATA (CONT)
NINE-HYDAC 9.5-68-9-604

WT-Time

| LAYERS IN FEET ABOVE GROUND | MEAN WIND COMPONENTS IN KNOTS | | | | | |
|--------------------------------------|-------------------------------|------|----------|------|-----|-----|
| | 1 | | 2 | | | |
| | 0630 MDT | | 0900 MDT | | | |
| | N-S | E-W | N-S | E-W | N-S | E-W |
| 4130-10000 | 10.0N | 1.5W | 9.0N | 0.0 | | |
| 10000-15000 | 5.0 | 6.0W | 6.5 | 7.5W | | |
| 15000-20000 | 14.0 | 17.0 | 14.0 | 17.0 | | |
| 20000-25000 | 18.0 | 21.5 | 19.0 | 16.0 | | |
| 25000-31040 | 14.0 | 11.5 | 14.0 | 11.5 | | |
| 31040-36000 | 21.0 | 12.0 | 13.0 | 11.0 | | |
| 36000-41000 | 13.5 | 36.5 | 13.5 | 36.5 | | |
| 41000-46000 | 22.0 | 60.5 | 20.0 | 55.5 | | |
| 46000-51000 | 23.0 | 63.5 | 19.0 | 51.5 | | |
| 51000-56000 | 15.5 | 42.5 | 21.5 | 37.0 | | |
| 56000-64400 | 14.0 | 24.0 | 17.0 | 29.5 | | |

TABLE V. RAWINSONDE-MEASURED WIND DATA
NIKE-HYDAC 9.5-68-5-604

STATION ALTITUDE 3984.00 FEET MSL
22 JUL 68
ASPERATION NO. 860

SIGNIFICANT LEVEL DATA
0759003904
WHITE SANDS SITE

WATM SITE COORDINATES
440140.00 FEET L
183045.00 FEET N

TABLE VI

| PRESSURE MILLIBARS | GEOMETRIC ALTITUDE MSL FEET | TEMPERATURE AIR DEGREES | | REL. HUM. PERCENT |
|-----------------------|-----------------------------------|----------------------------|-------------------------|----------------------|
| | | TEMPERATURE DEGREES | DEW POINT CENTIGRADE | |
| 882.8 | 3984.0 | 12.0 | 0.5 | 45.0 |
| 857.0 | 4000.0 | 13.1 | 0.0 | 38.0 |
| 845.0 | 5000.0 | 14.1 | -0.4 | 37.0 |
| 836.0 | 5497.4 | 13.5 | -0.7 | 33.0 |
| 803.0 | 6015.5 | 13.9 | -2.9 | 31.0 |
| 564.0 | 16070.2 | -4.6 | -23.7 | 21.0 |
| 489.0 | 15700.5 | -13.5 | -24.1 | 34.0 |
| 406.0 | 24201.0 | -23.0 | -39.9 | 20.0 |
| 376.0 | 22105.0 | -27.2 | -43.9 | 19.0 |
| 354.0 | 20001.1 | -34.9 | -50.1 | 20.0 |
| 282.0 | 32075.0 | -44.5 | 0. | -0. ** |
| 251.0 | 37001.1 | -52.1 | 0. | -0. ** |
| 212.0 | 58222.2 | -53.4 | 0. | -0. ** |
| 191.0 | 40547.5 | -56.9 | 0. | -0. ** |
| 182.0 | 41455.4 | -59.2 | 0. | -0. ** |
| 126.0 | 45465.5 | -67.5 | 0. | -0. ** |
| 119.0 | 50584.4 | -66.4 | 0. | -0. ** |
| 97.0 | 54661.7 | -66.4 | 0. | -0. ** |
| 66.0 | 62410.0 | -63.4 | 0. | -0. ** |
| 42.0 | 65811.4 | -57.6 | 0. | -0. ** |
| 35.0 | 71523.7 | -50.2 | 0. | -0. ** |
| 13.0 | 92501.0 | -50.5 | 0. | -0. ** |
| 6.7 | 11144.2 | -40.5 | 0. | -0. ** |

** RELATIVE HUMIDITY NOT SUPPLIED. ZERO VALUE ASSUMED FOR COMPUTATIONS.

NOT REPRODUCIBLE

UPPER AIR DATA

0759003904

WHITE SANDS SITE

STATION ALTITUDE 3989.00 FEET MSL

22 OCT. 68 .0630 HRS MDT

ASCENSION NO. 800

WSIM SITE COORDINATES

48580.00FEET E

105045.00FEET N

TABLE VII

| GEOMETRIC ALTITUDE MSL FEET | PRESSURE MILLIBARS | TEMPERATURE | | REL. HUM. PERCENT | DENSITY GM/CUBIC METER | SPEED OF SOUND | | WIND DIRECTION DEGREES(TN) | WIND DATA | | INDEX OF REFRACTION |
|-----------------------------------|-----------------------|----------------|------------------------|----------------------|------------------------------|-------------------|-------|----------------------------------|----------------|----------|---------------------------|
| | | AIR DEGREES | DEWPOINT CENTIGRADE | | | KNOTS | KNOTS | | SPEED KNOTS | | |
| 3989.0 | 882.8 | 12.0 | 0.5 | 42.0 | 1075.8 | 658.4 | | 50.0 | 8.9 | 1.000269 | |
| 4000.0 | 882.4 | 12.0 | 0.5 | 44.9 | 1075.2 | 658.5 | | 49.7 | 9.0 | 1.000269 | |
| 4500.0 | 866.6 | 13.9 | 0.8 | 40.6 | 1048.8 | 660.7 | | 47.4 | 10.7 | 1.000263 | |
| 5000.0 | 851.1 | 14.4 | -0.0 | 37.3 | 1028.6 | 661.1 | | 25.2 | 12.4 | 1.000257 | |
| 5500.0 | 835.9 | 15.5 | -0.7 | 35.0 | 1006.4 | 662.4 | | 12.9 | 14.1 | 1.000251 | |
| 6000.0 | 821.0 | 14.8 | -1.7 | 32.1 | 991.0 | 661.5 | | 0.8 | 15.8 | 1.000245 | |
| 6500.0 | 806.2 | 14.1 | -2.7 | 31.2 | 975.9 | 660.7 | | 355.2 | 16.5 | 1.000240 | |
| 7000.0 | 791.5 | 13.1 | -2.8 | 30.6 | 961.2 | 659.6 | | 4.0 | 15.0 | 1.000236 | |
| 7500.0 | 776.9 | 12.2 | -4.9 | 30.1 | 946.7 | 658.4 | | 10.6 | 13.2 | 1.000231 | |
| 8000.0 | 762.5 | 11.2 | -6.0 | 29.5 | 932.5 | 657.2 | | 14.0 | 10.6 | 1.000226 | |
| 8500.0 | 748.4 | 10.2 | -7.0 | 29.0 | 918.5 | 655.1 | | 14.4 | 9.0 | 1.000222 | |
| 9000.0 | 734.5 | 9.2 | -8.1 | 28.5 | 904.8 | 654.9 | | 11.3 | 8.0 | 1.000217 | |
| 9500.0 | 720.9 | 8.3 | -9.2 | 27.9 | 891.2 | 653.7 | | 2.4 | 7.1 | 1.000213 | |
| 10000.0 | 707.6 | 7.3 | -10.3 | 27.4 | 877.8 | 652.5 | | 347.5 | 6.2 | 1.000209 | |
| 10500.0 | 694.5 | 6.3 | -11.4 | 26.9 | 864.7 | 651.4 | | 340.4 | 6.6 | 1.000205 | |
| 11000.0 | 681.7 | 5.3 | -12.5 | 26.4 | 851.8 | 650.2 | | 133.1 | 7.1 | 1.000201 | |
| 11500.0 | 669.0 | 4.3 | -13.6 | 25.8 | 839.0 | 649.0 | | 324.9 | 6.9 | 1.000197 | |
| 12000.0 | 656.6 | 3.4 | -14.7 | 25.3 | 826.5 | 647.9 | | 319.0 | 6.9 | 1.000194 | |
| 12500.0 | 644.5 | 2.4 | -15.8 | 24.8 | 814.1 | 646.7 | | 320.5 | 7.5 | 1.000190 | |
| 13000.0 | 632.6 | 1.4 | -16.9 | 24.2 | 801.9 | 645.5 | | 319.3 | 8.3 | 1.000187 | |
| 13500.0 | 620.9 | 0.4 | -18.0 | 23.7 | 790.0 | 644.3 | | 313.0 | 9.3 | 1.000184 | |
| 14000.0 | 609.4 | -0.5 | -19.1 | 23.2 | 778.2 | 643.2 | | 308.0 | 10.6 | 1.000180 | |
| 14500.0 | 598.1 | -1.5 | -20.2 | 22.7 | 766.6 | 642.0 | | 305.8 | 12.2 | 1.000177 | |
| 15000.0 | 587.0 | -2.5 | -21.3 | 22.1 | 755.2 | 640.8 | | 304.0 | 13.9 | 1.000174 | |
| 15500.0 | 576.1 | -3.5 | -22.4 | 21.6 | 743.9 | 639.6 | | 304.1 | 16.2 | 1.000171 | |
| 16000.0 | 565.5 | -4.5 | -23.5 | 21.1 | 732.8 | 638.5 | | 304.5 | 18.5 | 1.000168 | |
| 16500.0 | 554.6 | -5.7 | -24.6 | 22.5 | 721.9 | 637.0 | | 309.1 | 20.4 | 1.000166 | |
| 17000.0 | 543.8 | -6.8 | -24.0 | 24.3 | 711.1 | 635.6 | | 313.7 | 22.2 | 1.000163 | |
| 17500.0 | 533.2 | -8.1 | -24.3 | 26.1 | 700.5 | 634.1 | | 315.7 | 23.2 | 1.000161 | |
| 18000.0 | 522.8 | -9.3 | -24.6 | 27.9 | 690.0 | 632.6 | | 317.7 | 24.3 | 1.000158 | |

NOT REPRODUCIBLE

NOT REPRODUCIBLE

STATION ALTITUDE 3989.00 FEET MSL
22 JUL 68
ASCENSION NO. 840

0630 HRS MDT

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE VII (Cont)

| GEOMETRIC ALTITUDE MSL FEET | PRESSURE MILLIBARS | TEMPERATURE | | REL. HUM. PERCENT | DENSITY GM/CUBIC METER | SPEED OF SOUND | | WIND DATA | | INDEX OF REFRACTION |
|-----------------------------------|-----------------------|----------------|------------------------|----------------------|------------------------------|-------------------|-------|--------------------------|----------------|---------------------------|
| | | AIR DEGREES | DEWPOINT CENTIGRADE | | | KNUTS | KNUTS | DIRECTION DEGREES(TN) | SPEED KNUTS | |
| 18500.0 | 512.0 | -10.6 | -25.0 | 29.7 | 679.8 | 631.2 | 517.7 | 517.7 | 24.4 | 1.000156 |
| 19000.0 | 502.7 | -11.8 | -25.4 | 31.5 | 669.7 | 629.7 | 317.5 | 317.5 | 24.6 | 1.000153 |
| 19500.0 | 492.9 | -13.0 | -25.9 | 33.3 | 659.7 | 628.2 | 316.2 | 316.2 | 25.5 | 1.000151 |
| 20000.0 | 483.1 | -14.1 | -27.0 | 33.1 | 649.4 | 626.8 | 315.2 | 315.2 | 26.6 | 1.000148 |
| 20500.0 | 473.3 | -15.2 | -28.4 | 31.5 | 638.9 | 625.6 | 315.7 | 315.7 | 28.4 | 1.000146 |
| 21000.0 | 463.8 | -16.2 | -29.9 | 30.0 | 628.6 | 624.3 | 315.5 | 315.5 | 29.9 | 1.000143 |
| 21500.0 | 454.5 | -17.2 | -31.3 | 28.5 | 618.5 | 623.0 | 314.5 | 314.5 | 30.7 | 1.000140 |
| 22000.0 | 445.3 | -18.3 | -32.6 | 27.0 | 608.5 | 621.7 | 313.8 | 313.8 | 30.8 | 1.000139 |
| 22500.0 | 436.3 | -19.3 | -34.3 | 25.4 | 598.7 | 620.4 | 313.3 | 313.3 | 30.4 | 1.000135 |
| 23000.0 | 427.5 | -20.4 | -35.8 | 23.9 | 589.1 | 619.2 | 314.3 | 314.3 | 29.0 | 1.000133 |
| 23500.0 | 418.9 | -21.4 | -37.4 | 22.4 | 579.6 | 617.9 | 315.9 | 315.9 | 27.2 | 1.000131 |
| 24000.0 | 410.5 | -22.4 | -39.0 | 20.8 | 570.3 | 616.6 | 319.0 | 319.0 | 25.2 | 1.000128 |
| 24500.0 | 402.1 | -23.5 | -40.4 | 19.9 | 561.1 | 615.2 | 322.7 | 322.7 | 23.2 | 1.000126 |
| 25000.0 | 393.8 | -24.7 | -41.5 | 19.6 | 552.1 | 613.8 | 326.9 | 326.9 | 21.6 | 1.000124 |
| 25500.0 | 385.6 | -25.8 | -42.6 | 19.3 | 543.1 | 612.4 | 331.2 | 331.2 | 20.1 | 1.000122 |
| 26000.0 | 377.6 | -27.0 | -43.7 | 19.1 | 534.4 | 611.0 | 331.0 | 331.0 | 19.7 | 1.000120 |
| 26500.0 | 369.7 | -28.3 | -44.8 | 19.1 | 526.0 | 609.3 | 329.7 | 329.7 | 19.6 | 1.000118 |
| 27000.0 | 361.8 | -29.7 | -45.9 | 19.3 | 517.8 | 607.6 | 327.9 | 327.9 | 19.0 | 1.000116 |
| 27500.0 | 354.2 | -31.1 | -47.0 | 19.5 | 509.7 | 605.8 | 325.9 | 325.9 | 18.3 | 1.000114 |
| 28000.0 | 346.6 | -32.5 | -48.1 | 19.7 | 501.8 | 604.1 | 323.2 | 323.2 | 17.9 | 1.000112 |
| 28500.0 | 339.3 | -33.9 | -49.2 | 19.9 | 494.0 | 602.3 | 320.4 | 320.4 | 17.5 | 1.000110 |
| 29000.0 | 332.0 | -35.2 | -50.7 | 19.3** | 486.2 | 600.6 | 319.9 | 319.9 | 17.1 | 1.000109 |
| 29500.0 | 324.7 | -36.5 | -53.0 | 16.7** | 478.1 | 599.0 | 320.4 | 320.4 | 16.7 | 1.000107 |
| 30000.0 | 317.6 | -37.1 | -55.4 | 14.1** | 470.1 | 597.4 | 321.8 | 321.8 | 16.9 | 1.000105 |
| 30500.0 | 310.6 | -38.0 | -58.1 | 11.4** | 462.2 | 595.8 | 323.7 | 323.7 | 17.2 | 1.000103 |
| 31000.0 | 303.8 | -40.3 | -61.2 | 8.8** | 454.5 | 594.2 | 327.4 | 327.4 | 17.9 | 1.000101 |
| 31500.0 | 297.1 | -41.7 | -64.8 | 6.2** | 447.0 | 592.6 | 331.8 | 331.8 | 18.7 | 1.000100 |
| 32000.0 | 290.6 | -42.8 | -69.7 | 3.5** | 439.5 | 591.0 | 334.5 | 334.5 | 19.7 | 1.000098 |
| 32500.0 | 284.2 | -44.1 | -75.4 | 0.9** | 432.2 | 589.4 | 336.3 | 336.3 | 20.9 | 1.000096 |
| 33000.0 | 277.8 | -45.1 | 0. | -0. ** | 424.4 | 588.1 | 336.2 | 336.2 | 22.8 | 1.000095 |

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

NOT REPRODUCIBLE

STATION ALTITUDE 3989.00 FEET MSL
22 OCT. 68
ASCENSION NO. 860

UPPER AIR DATA
0759003904
WHITE SANDS SITE

WSM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE VII (Cont)

| GEOMETRIC ALTITUDE MSL FEET | PRESSURE MILLIBARS | TEMPERATURE | | REL. HUM. PERCENT | DENSITY GM/CUBIC METER | SPEED OF SOUND | | WIND DATA DIRECTION DEGREES(TN) | SPEED KNOTS | INDEX OF REFRACTION |
|-----------------------------------|-----------------------|----------------|------------------------|----------------------|------------------------------|-------------------|------|---------------------------------------|----------------|---------------------------|
| | | AIR DEGREES | DEWPOINT CENTIGRADE | | | KNUS | KNUS | | | |
| 33500.0 | 271.5 | -45.9 | 0. | -0. | 416.3 | 586.9 | | 335.3 | 25.0 | 1.000093 |
| 34000.0 | 265.3 | -46.6 | 0. | -0. | 408.4 | 585.8 | | 323.1 | 25.5 | 1.000091 |
| 34500.0 | 259.2 | -47.7 | 0. | -0. | 400.7 | 584.6 | | 310.4 | 27.6 | 1.000089 |
| 35000.0 | 253.3 | -48.6 | 0. | -0. | 393.0 | 583.5 | | 326.8 | 28.4 | 1.000088 |
| 35500.0 | 247.6 | -49.5 | 0. | -0. | 385.6 | 582.4 | | 322.0 | 28.6 | 1.000086 |
| 36000.0 | 241.9 | -50.3 | 0. | -0. | 378.3 | 581.2 | | 317.3 | 28.9 | 1.000084 |
| 36500.0 | 236.4 | -51.2 | 0. | -0. | 371.1 | 580.1 | | 311.4 | 28.7 | 1.000083 |
| 37000.0 | 231.0 | -52.1 | 0. | -0. | 364.1 | 578.9 | | 305.5 | 28.4 | 1.000081 |
| 37500.0 | 225.6 | -53.3 | 0. | -0. | 357.5 | 577.4 | | 300.1 | 30.2 | 1.000080 |
| 38000.0 | 220.4 | -54.4 | 0. | -0. | 351.0 | 575.9 | | 295.1 | 33.8 | 1.000078 |
| 38500.0 | 215.2 | -55.4 | 0. | -0. | 344.4 | 574.5 | | 291.5 | 37.8 | 1.000077 |
| 39000.0 | 210.1 | -55.7 | 0. | -0. | 336.7 | 574.1 | | 291.3 | 43.1 | 1.000075 |
| 39500.0 | 205.2 | -56.0 | 0. | -0. | 329.2 | 573.8 | | 291.1 | 48.5 | 1.000073 |
| 40000.0 | 200.3 | -56.3 | 0. | -0. | 321.9 | 573.4 | | 291.1 | 54.0 | 1.000072 |
| 40500.0 | 195.0 | -56.6 | 0. | -0. | 314.7 | 573.0 | | 291.2 | 59.5 | 1.000070 |
| 41000.0 | 191.0 | -56.9 | 0. | -0. | 307.7 | 572.6 | | 291.2 | 63.3 | 1.000069 |
| 41500.0 | 186.4 | -57.1 | 0. | -0. | 302.0 | 571.1 | | 291.2 | 65.8 | 1.000067 |
| 42000.0 | 182.0 | -57.2 | 0. | -0. | 296.4 | 569.5 | | 291.1 | 67.3 | 1.000066 |
| 42500.0 | 177.6 | -57.8 | 0. | -0. | 289.9 | 568.8 | | 290.7 | 68.3 | 1.000065 |
| 43000.0 | 173.2 | -58.3 | 0. | -0. | 283.6 | 568.1 | | 290.4 | 68.7 | 1.000063 |
| 43500.0 | 169.0 | -58.4 | 0. | -0. | 277.4 | 567.3 | | 290.1 | 68.6 | 1.000062 |
| 44000.0 | 164.9 | -61.4 | 0. | -0. | 271.3 | 566.6 | | 289.8 | 68.5 | 1.000060 |
| 44500.0 | 160.9 | -62.0 | 0. | -0. | 265.4 | 565.8 | | 289.5 | 67.7 | 1.000059 |
| 45000.0 | 156.9 | -62.5 | 0. | -0. | 259.6 | 565.1 | | 289.1 | 66.3 | 1.000058 |
| 45500.0 | 153.1 | -63.1 | 0. | -0. | 254.0 | 564.3 | | 288.6 | 65.3 | 1.000057 |
| 46000.0 | 149.4 | -63.7 | 0. | -0. | 248.4 | 563.6 | | 287.9 | 65.1 | 1.000055 |
| 46500.0 | 145.7 | -64.2 | 0. | -0. | 243.0 | 562.8 | | 287.1 | 64.8 | 1.000054 |
| 47000.0 | 142.2 | -64.8 | 0. | -0. | 237.7 | 562.1 | | 286.8 | 64.0 | 1.000053 |
| 47500.0 | 138.7 | -65.5 | 0. | -0. | 232.5 | 561.3 | | 286.6 | 63.1 | 1.000052 |
| 48000.0 | 135.3 | -65.9 | 0. | -0. | 227.5 | 560.6 | | 286.3 | 62.5 | 1.000051 |

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THIS INTERPOLATION.

NOT REPRODUCIBLE

STATION ALTITUDE 3989.00 FEET MSL
22 OCT. 68
ASCENSION NO. 850

UPPER AIR DATA
0759003904
WHITE SANDS SITE

WSTW SITE COORDINATES
488580.00 FEET E
185045.00 FEET N

TABLE VII (Cont)

| GEOMETRIC ALTITUDE MSL FEET | PRESSURE MILLIBARS | TEMPERATURE | | REL. HUM. PERCENT | DENSITY GM/CUBIC METER | SPEED OF SOUND | | WIND DIRECTION DEGREES (M) | WIND DATA | | INDEX OF REFRACTION |
|-----------------------------------|-----------------------|----------------|------------------------|----------------------|------------------------------|-------------------|-------|----------------------------------|----------------|----------|---------------------------|
| | | AIR DEGREES | DEWPOINT CENTIGRADE | | | KNOWS | KNOWS | | SPEED KNOTS | | |
| 48500.0 | 132.0 | -66.4 | 0. | -0. | 222.5 | 559.8 | 286.1 | 286.1 | 62.3 | 1.000050 | |
| 49000.0 | 128.8 | -67.0 | 0. | -0. | 217.7 | 559.1 | 285.9 | 285.9 | 62.1 | 1.000048 | |
| 49500.0 | 125.7 | -67.4 | 0. | -0. | 212.8 | 558.5 | 286.7 | 286.7 | 60.1 | 1.000047 | |
| 50000.0 | 122.5 | -66.9 | 0. | -0. | 207.0 | 559.2 | 287.7 | 287.7 | 57.9 | 1.000046 | |
| 50500.0 | 119.5 | -66.3 | 0. | -0. | 201.3 | 560.0 | 288.1 | 288.1 | 55.9 | 1.000045 | |
| 51000.0 | 116.5 | -66.2 | 0. | -0. | 196.2 | 560.1 | 288.0 | 288.0 | 54.0 | 1.000044 | |
| 51500.0 | 113.7 | -66.2 | 0. | -0. | 191.4 | 560.1 | 287.9 | 287.9 | 52.1 | 1.000043 | |
| 52000.0 | 110.9 | -66.3 | 0. | -0. | 186.7 | 560.1 | 288.0 | 288.0 | 50.1 | 1.000042 | |
| 52500.0 | 108.1 | -66.3 | 0. | -0. | 182.1 | 560.0 | 288.0 | 288.0 | 48.1 | 1.000041 | |
| 53000.0 | 105.4 | -66.3 | 0. | -0. | 177.4 | 560.0 | 287.8 | 287.8 | 46.5 | 1.000040 | |
| 53500.0 | 102.8 | -66.3 | 0. | -0. | 173.3 | 560.0 | 287.2 | 287.2 | 45.4 | 1.000039 | |
| 54000.0 | 100.3 | -66.4 | 0. | -0. | 169.0 | 559.9 | 286.7 | 286.7 | 44.3 | 1.000038 | |
| 54500.0 | 97.8 | -66.4 | 0. | -0. | 164.8 | 559.9 | 287.9 | 287.9 | 43.2 | 1.000037 | |
| 55000.0 | 95.4 | -66.4 | 0. | -0. | 160.7 | 560.0 | 289.1 | 289.1 | 42.0 | 1.000036 | |
| 55500.0 | 93.1 | -66.1 | 0. | -0. | 156.6 | 560.3 | 290.2 | 290.2 | 41.0 | 1.000035 | |
| 56000.0 | 90.8 | -66.0 | 0. | -0. | 152.7 | 560.5 | 291.0 | 291.0 | 40.3 | 1.000034 | |
| 56500.0 | 88.6 | -65.8 | 0. | -0. | 148.8 | 560.7 | 291.8 | 291.8 | 39.6 | 1.000033 | |
| 57000.0 | 86.4 | -65.6 | 0. | -0. | 145.0 | 560.9 | 293.2 | 293.2 | 38.9 | 1.000032 | |
| 57500.0 | 84.3 | -65.4 | 0. | -0. | 141.3 | 561.2 | 295.2 | 295.2 | 38.2 | 1.000031 | |
| 58000.0 | 82.2 | -65.3 | 0. | -0. | 137.8 | 561.4 | 297.2 | 297.2 | 37.5 | 1.000031 | |
| 58500.0 | 80.2 | -65.1 | 0. | -0. | 134.3 | 561.6 | 298.1 | 298.1 | 36.4 | 1.000030 | |
| 59000.0 | 78.2 | -64.9 | 0. | -0. | 130.9 | 561.8 | 298.9 | 298.9 | 35.2 | 1.000029 | |
| 59500.0 | 76.3 | -64.8 | 0. | -0. | 127.5 | 562.1 | 299.8 | 299.8 | 34.0 | 1.000028 | |
| 60000.0 | 74.4 | -64.6 | 0. | -0. | 124.3 | 562.3 | 302.0 | 302.0 | 32.1 | 1.000028 | |
| 60500.0 | 72.6 | -64.4 | 0. | -0. | 121.2 | 562.5 | 304.2 | 304.2 | 30.2 | 1.000027 | |
| 61000.0 | 70.8 | -64.3 | 0. | -0. | 118.1 | 562.8 | 305.7 | 305.7 | 28.2 | 1.000026 | |
| 61500.0 | 69.1 | -64.1 | 0. | -0. | 115.1 | 563.0 | 305.8 | 305.8 | 26.0 | 1.000026 | |
| 62000.0 | 67.4 | -63.9 | 0. | -0. | 112.2 | 563.2 | 306.0 | 306.0 | 23.8 | 1.000025 | |
| 62500.0 | 65.7 | -63.7 | 0. | -0. | 109.3 | 563.5 | 305.4 | 305.4 | 22.5 | 1.000024 | |
| 63000.0 | 64.1 | -63.5 | 0. | -0. | 106.5 | 564.1 | 303.7 | 303.7 | 22.0 | 1.000024 | |

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

UPPER AIR DATA
0759003904
WHITE SANDS SITE

STATION ALTITUDE 3989.00 FEET MSL
22 OCT. 68
ASCENSION NO. 860

WSM SITE COORDINATES
488586.00FEET E
185045.00FEET N

TABLE VII (Cont)

| GEOMETRIC ALTITUDE MSL FEET | PRESSURE MILLIBARS | TEMPERATURE | | REL. HUM. PERCENT | DENSITY GM/CUBIC METER | SPEED OF SOUND | | WIND DATA DIRECTION DEGREES (TN) | SPEED KNOTS | INDEX OF REFRACTION |
|-----------------------------------|-----------------------|----------------|------------------------|----------------------|------------------------------|-------------------|-------|--|----------------|---------------------------|
| | | AIR DEGREES | DEWPOINT CENTIGRADE | | | KNOTS | KNOTS | | | |
| 63500.0 | 62.6 | -62.9 | 0. | -0. ** | 103.7 | 564.6 | | 302.1 | 21.6 | 1.000023 |
| 64000.0 | 61.1 | -62.5 | 0. | -0. ** | 101.0 | 565.2 | | 300.8 | 21.0 | 1.000022 |
| 64500.0 | 59.6 | -62.1 | 0. | -0. ** | 98.4 | 565.7 | | 299.8 | 20.4 | 1.000022 |
| 65000.0 | 58.2 | -61.6 | 0. | -0. ** | 95.8 | 566.3 | | 298.9 | 19.9 | 1.000021 |
| 65500.0 | 56.8 | -61.2 | 0. | -0. ** | 93.4 | 566.9 | | 298.3 | 19.4 | 1.000021 |
| 66000.0 | 55.4 | -60.8 | 0. | -0. ** | 90.9 | 567.4 | | 298.1 | 19.0 | 1.000020 |
| 66500.0 | 54.1 | -60.4 | 0. | -0. ** | 88.6 | 568.0 | | 298.0 | 18.5 | 1.000020 |
| 67000.0 | 52.8 | -60.0 | 0. | -0. ** | 86.3 | 568.5 | | 298.9 | 17.1 | 1.000019 |
| 67500.0 | 51.5 | -59.5 | 0. | -0. ** | 84.0 | 569.1 | | 300.8 | 14.6 | 1.000019 |
| 68000.0 | 50.3 | -59.1 | 0. | -0. ** | 81.8 | 569.6 | | 302.7 | 12.0 | 1.000018 |
| 68500.0 | 49.1 | -58.7 | 0. | -0. ** | 79.7 | 570.2 | | 304.6 | 10.7 | 1.000018 |
| 69000.0 | 47.9 | -58.3 | 0. | -0. ** | 77.7 | 570.8 | | 306.4 | 10.6 | 1.000017 |
| 69500.0 | 46.7 | -57.9 | 0. | -0. ** | 75.6 | 571.3 | | 308.2 | 10.4 | 1.000017 |
| 70000.0 | 45.6 | -57.6 | 0. | -0. ** | 73.7 | 571.6 | | 309.9 | 9.5 | 1.000016 |
| 70500.0 | 44.5 | -57.7 | 0. | -0. ** | 72.0 | 571.6 | | 311.7 | 7.8 | 1.000016 |
| 71000.0 | 43.5 | -57.7 | 0. | -0. ** | 70.3 | 571.5 | | 313.4 | 6.1 | 1.000015 |
| 71500.0 | 42.4 | -57.8 | 0. | -0. ** | 68.7 | 571.4 | | 316.1 | 5.3 | 1.000015 |
| 72000.0 | 41.4 | -57.8 | 0. | -0. ** | 67.1 | 571.4 | | 319.5 | 5.3 | 1.000015 |
| 72500.0 | 40.5 | -57.9 | 0. | -0. ** | 65.5 | 571.3 | | 323.0 | 5.3 | 1.000015 |
| 73000.0 | 39.5 | -57.9 | 0. | -0. ** | 63.9 | 571.2 | | 321.4 | 5.3 | 1.000014 |
| 73500.0 | 38.6 | -58.0 | 0. | -0. ** | 62.4 | 571.2 | | 314.6 | 5.2 | 1.000014 |
| 74000.0 | 37.6 | -58.0 | 0. | -0. ** | 61.0 | 571.1 | | 307.9 | 5.0 | 1.000014 |
| 74500.0 | 36.8 | -58.1 | 0. | -0. ** | 59.5 | 571.0 | | 301.8 | 5.2 | 1.000013 |
| 75000.0 | 35.9 | -58.1 | 0. | -0. ** | 58.2 | 570.9 | | 297.0 | 5.9 | 1.000013 |
| 75500.0 | 35.0 | -58.2 | 0. | -0. ** | 56.8 | 570.9 | | 292.1 | 6.6 | 1.000013 |
| 76000.0 | 34.2 | -58.0 | 0. | -0. ** | 55.4 | 571.1 | | 287.9 | 7.3 | 1.000012 |
| 76500.0 | 33.4 | -57.8 | 0. | -0. ** | 54.1 | 571.4 | | 286.7 | 7.8 | 1.000012 |
| 77000.0 | 32.6 | -57.7 | 0. | -0. ** | 52.8 | 571.6 | | 285.5 | 8.2 | 1.000012 |
| 77500.0 | 31.9 | -57.5 | 0. | -0. ** | 51.5 | 571.8 | | 284.3 | 8.7 | 1.000011 |
| 78000.0 | 31.1 | -57.5 | 0. | -0. ** | 50.3 | 572.1 | | 289.7 | 7.3 | 1.000011 |

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

NOT REPRODUCIBLE

STATION ALTITUDE 3469.00 FEET MSL
22 OCT. 68
ASCENSION NO. 840

UPPER AIR DATA
0759003904
WHITE SANDS SITE

WSM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE VII (Cont)

| GEOMETRIC ALTITUDE MSL FEET | PRESSURE MILLIBARS | TEMPERATURE | | REL. HUM. PERCENT | DENSITY GM/CUBIC METER | SPEED OF SOUND | | WIND DATA | | INDEX OF REFRACTION |
|-----------------------------------|-----------------------|------------------------------|------------------------|----------------------|------------------------------|-------------------|-------|--------------------------|----------------|---------------------------|
| | | AIR DEGREES CENTIGRADE | DEWPOINT CENTIGRADE | | | KNUTS | KNUTS | DIRECTION DEGREES(TN) | SPEED KNUTS | |
| 78500.0 | 30.4 | -57.1 | 0. | -0. | 49.0 | 572.3 | 295.7 | 295.7 | 5.8 | 1.000011 |
| 79000.0 | 29.7 | -56.9 | 0. | -0. | 47.9 | 572.6 | 301.7 | 301.7 | 4.2 | 1.000011 |
| 79500.0 | 29.0 | -56.7 | 0. | -0. | 46.7 | 572.8 | 308.7 | 308.7 | 4.3 | 1.000010 |
| 80000.0 | 28.3 | -56.6 | 0. | -0. | 45.6 | 573.1 | 316.2 | 316.2 | 5.4 | 1.000010 |
| 80500.0 | 27.7 | -56.4 | 0. | -0. | 44.5 | 573.3 | 323.7 | 323.7 | 6.4 | 1.000010 |
| 81000.0 | 27.0 | -56.2 | 0. | -0. | 43.4 | 573.5 | 328.1 | 328.1 | 7.1 | 1.000010 |
| 81500.0 | 26.4 | -56.0 | 0. | -0. | 42.3 | 573.8 | 327.3 | 327.3 | 7.4 | 1.000009 |
| 82000.0 | 25.8 | -55.9 | 0. | -0. | 41.3 | 574.0 | 326.4 | 326.4 | 7.7 | 1.000009 |
| 82500.0 | 25.2 | -55.6 | 0. | -0. | 40.3 | 574.3 | 325.9 | 325.9 | 7.8 | 1.000009 |
| 83000.0 | 24.6 | -55.5 | 0. | -0. | 39.4 | 574.5 | 327.7 | 327.7 | 6.7 | 1.000009 |
| 83500.0 | 24.0 | -55.3 | 0. | -0. | 38.4 | 574.8 | 329.5 | 329.5 | 5.6 | 1.000009 |
| 84000.0 | 23.5 | -55.1 | 0. | -0. | 37.5 | 575.0 | 331.4 | 331.4 | 4.4 | 1.000008 |
| 84500.0 | 22.9 | -54.9 | 0. | -0. | 36.6 | 575.2 | 333.1 | 333.1 | 4.9 | 1.000008 |
| 85000.0 | 22.4 | -54.7 | 0. | -0. | 35.7 | 575.5 | 334.7 | 334.7 | 5.7 | 1.000008 |
| 85500.0 | 21.9 | -54.5 | 0. | -0. | 34.8 | 575.7 | 336.4 | 336.4 | 6.6 | 1.000008 |
| 86000.0 | 21.3 | -54.4 | 0. | -0. | 34.0 | 576.0 | 337.1 | 337.1 | 7.3 | 1.000008 |
| 86500.0 | 20.8 | -54.2 | 0. | -0. | 33.2 | 576.2 | 335.8 | 335.8 | 7.6 | 1.000007 |
| 87000.0 | 20.4 | -54.0 | 0. | -0. | 32.4 | 576.4 | 334.5 | 334.5 | 7.9 | 1.000007 |
| 87500.0 | 19.9 | -53.8 | 0. | -0. | 31.6 | 576.7 | 333.2 | 333.2 | 8.2 | 1.000007 |
| 88000.0 | 19.4 | -53.6 | 0. | -0. | 30.8 | 576.9 | 328.5 | 328.5 | 10.9 | 1.000007 |
| 88500.0 | 19.0 | -53.4 | 0. | -0. | 30.1 | 577.2 | 322.8 | 322.8 | 14.4 | 1.000007 |
| 89000.0 | 18.5 | -53.3 | 0. | -0. | 29.3 | 577.4 | 317.2 | 317.2 | 17.8 | 1.000007 |
| 89500.0 | 18.1 | -53.1 | 0. | -0. | 28.6 | 577.6 | 312.1 | 312.1 | 20.5 | 1.000006 |
| 90000.0 | 17.7 | -52.9 | 0. | -0. | 27.9 | 577.9 | 309.8 | 309.8 | 19.7 | 1.000006 |
| 90500.0 | 17.3 | -52.7 | 0. | -0. | 27.3 | 578.1 | 307.5 | 307.5 | 18.8 | 1.000006 |
| 91000.0 | 16.9 | -52.5 | 0. | -0. | 26.6 | 578.4 | 305.2 | 305.2 | 18.0 | 1.000006 |
| 91500.0 | 16.5 | -52.3 | 0. | -0. | 26.0 | 578.6 | 302.9 | 302.9 | 18.6 | 1.000006 |
| 92000.0 | 16.1 | -52.2 | 0. | -0. | 25.3 | 578.9 | 300.7 | 300.7 | 20.0 | 1.000006 |
| 92500.0 | 15.7 | -52.0 | 0. | -0. | 24.7 | 579.1 | 298.5 | 298.5 | 21.5 | 1.000005 |
| 93000.0 | 15.3 | -51.8 | 0. | -0. | 24.1 | 579.3 | 296.3 | 296.3 | 22.8 | 1.000005 |

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET MSL
22 OCT. 68
ASCENSION NO. 860.

UPPER AIR DATA
0759003904
WHITE SANDS SITE

WSTM SITE COORDINATES
438580.00FEET E
185045.00FEET N

TABIX VII (Cont)

| GEOMETRIC ALTITUDE MSL FEET | PRESSURE MILLIBARS | TEMPERATURE | | REL. HUM. PERCENT | DENSITY GM/CUBIC METER | SPEED OF SOUND | | WIND DATA | | INDEX OF REFRACTION |
|-----------------------------------|-----------------------|----------------|------------------------|----------------------|------------------------------|-------------------|-------|----------------------|----------------|---------------------------|
| | | AIR DEGREES | DEWPOINT CENTIGRADE | | | KNOTS | KNOTS | DIRECTION DEGREES | SPEED KNOTS | |
| 93500.0 | 15.0 | -51.6 | 0. | -0. | 23.6 | 579.6 | 293.3 | 293.3 | 23.1 | 1.000005 |
| 94000.0 | 14.6 | -51.4 | 0. | -0. | 23.0 | 579.8 | 290.4 | 290.4 | 23.3 | 1.000005 |
| 94500.0 | 14.3 | -51.2 | 0. | -0. | 22.4 | 580.1 | 287.5 | 287.5 | 23.6 | 1.000005 |
| 95000.0 | 14.0 | -51.1 | 0. | -0. | 21.9 | 580.3 | 285.2 | 285.2 | 24.3 | 1.000005 |
| 95500.0 | 13.6 | -50.9 | 0. | -0. | 21.4 | 580.5 | 283.3 | 283.3 | 25.5 | 1.000005 |
| 96000.0 | 13.3 | -50.7 | 0. | -0. | 20.8 | 580.8 | 281.4 | 281.4 | 26.6 | 1.000005 |
| 96500.0 | 13.0 | -50.5 | 0. | -0. | 20.3 | 581.0 | 279.6 | 279.6 | 27.8 | 1.000005 |
| 97000.0 | 12.7 | -50.2 | 0. | -0. | 19.9 | 581.5 | 279.9 | 279.9 | 28.0 | 1.000004 |
| 97500.0 | 12.4 | -49.8 | 0. | -0. | 19.4 | 581.9 | 280.4 | 280.4 | 28.1 | 1.000004 |
| 98000.0 | 12.1 | -49.5 | 0. | -0. | 18.9 | 582.3 | 280.9 | 280.9 | 28.2 | 1.000004 |
| 98500.0 | 11.9 | -49.1 | 0. | -0. | 18.5 | 582.8 | 281.6 | 281.6 | 28.1 | 1.000004 |
| 99000.0 | 11.6 | -48.8 | 0. | -0. | 18.0 | 583.2 | 282.9 | 282.9 | 27.4 | 1.000004 |
| 99500.0 | 11.3 | -48.5 | 0. | -0. | 17.6 | 583.7 | 284.1 | 284.1 | 26.6 | 1.000004 |
| 100000.0 | 11.1 | -48.1 | 0. | -0. | 17.2 | 584.1 | 285.3 | 285.3 | 25.8 | 1.000004 |
| 100500.0 | 10.8 | -47.8 | 0. | -0. | 16.8 | 584.6 | 286.2 | 286.2 | 25.5 | 1.000004 |
| 101000.0 | 10.6 | -47.4 | 0. | -0. | 16.4 | 585.0 | 286.8 | 286.8 | 25.5 | 1.000004 |
| 101500.0 | 10.4 | -47.1 | 0. | -0. | 16.0 | 585.4 | 287.4 | 287.4 | 25.5 | 1.000004 |
| 102000.0 | 10.1 | -46.7 | 0. | -0. | 15.6 | 585.9 | 287.9 | 287.9 | 25.6 | 1.000003 |
| 102500.0 | 9.9 | -46.4 | 0. | -0. | 15.2 | 586.3 | 285.7 | 285.7 | 25.5 | 1.000003 |
| 103000.0 | 9.7 | -46.1 | 0. | -0. | 14.9 | 586.8 | 282.6 | 282.6 | 25.5 | 1.000003 |
| 103500.0 | 9.5 | -45.7 | 0. | -0. | 14.5 | 587.2 | 279.5 | 279.5 | 25.4 | 1.000003 |
| 104000.0 | 9.3 | -45.4 | 0. | -0. | 14.2 | 587.7 | 276.5 | 276.5 | 25.5 | 1.000003 |
| 104500.0 | 9.1 | -45.0 | 0. | -0. | 13.8 | 588.1 | 274.9 | 274.9 | 27.3 | 1.000003 |
| 105000.0 | 8.8 | -44.7 | 0. | -0. | 13.5 | 588.5 | 273.2 | 273.2 | 29.2 | 1.000003 |
| 105500.0 | 8.6 | -44.4 | 0. | -0. | 13.2 | 589.0 | 271.6 | 271.6 | 31.0 | 1.000003 |
| 106000.0 | 8.5 | -44.0 | 0. | -0. | 12.9 | 589.4 | 270.2 | 270.2 | 32.7 | 1.000003 |
| 106500.0 | 8.3 | -43.7 | 0. | -0. | 12.6 | 589.9 | 269.3 | 269.3 | 34.2 | 1.000003 |
| 107000.0 | 8.1 | -43.3 | 0. | -0. | 12.3 | 590.3 | 268.4 | 268.4 | 35.8 | 1.000003 |
| 107500.0 | 7.9 | -43.0 | 0. | -0. | 12.0 | 590.7 | 267.5 | 267.5 | 37.3 | 1.000003 |
| 108000.0 | 7.7 | -42.6 | 0. | -0. | 11.7 | 591.2 | | | | 1.000003 |

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

WSTM SITE COORDINATES
489580.00FEET E
185045.00FEET N

TAXPAYER (CAGE)

| GEOMETRIC ALTITUDE | PRESSURE | TEMPERATURE | | REL. HUM. PERCENT | DENSITY GM/CUBIC METER | WIND DATA | | INDEX OF REFRACTION |
|-----------------------|----------|------------------------------|------------------------|----------------------|------------------------------|---------------------------|----------------|---------------------------|
| | | AIR DEGREES CENTIGRADE | DEWPOINT CENTIGRADE | | | DIRECTION DEGREES (TN) | SPEED KNOTS | |
| 100500.0 | 7.6 | -42.3 | 0. | -0. | 12.4 | 591.6 | 1.0000003 | |
| 109000.0 | 7.4 | -42.0 | 0. | -0. | 11.1 | 592.0 | 1.0000002 | |
| 108500.0 | 7.2 | -41.6 | 0. | -0. | 10.9 | 592.5 | 1.0000002 | |
| 120000.0 | 7.1 | -41.3 | 0. | -0. | 10.6 | 592.9 | 1.0000002 | |
| 110500.0 | 6.9 | -40.9 | 0. | -0. | 10.3 | 593.4 | 1.0000002 | |
| 111000.0 | 6.7 | -40.6 | 0. | -0. | 10.1 | 593.8 | 1.0000002 | |

*** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET MSL

22 ULT. 00

ASCENSION NO. 060

MANDATORY LEVELS

0759003904

WHITE SANDS SITE

WSTM SITE COORDINATES

488580.00FEET E

185045.00FEET N

TABLE VIII

| PRESSURE GEOPUTENTIAL | | TEMPERATURE | | REL. HUM. PERCENT | WIND DATA | |
|-----------------------|---------|----------------|------------------------|----------------------|--------------------------|----------------|
| MILLIBARS | FEET | AIR DEGREES | DEWPOINT CENTIGRADE | | DIRECTION DEGREES(TN) | SPEED KNOTS |
| 850.0 | 5035. | 14.2 | -0.2 | 37. | 24.3 | 12.5 |
| 800.0 | 6716. | 13.7 | -3.2 | 31. | 359.0 | 15.8 |
| 750.0 | 8408. | 10.3 | -6.9 | 29. | 14.5 | 9.0 |
| 700.0 | 10355. | 6.7 | -11.0 | 27. | 343.0 | 6.4 |
| 650.0 | 12341. | 2.8 | -15.3 | 25. | 320.1 | 7.3 |
| 600.0 | 14450. | -1.4 | -20.0 | 23. | 306.0 | 12.0 |
| 550.0 | 16706. | -6.2 | -23.9 | 23. | 311.1 | 21.2 |
| 500.0 | 19125. | -12.1 | -25.5 | 32. | 317.2 | 24.9 |
| 450.0 | 21740. | -17.7 | -32.0 | 28. | 314.0 | 31.0 |
| 400.0 | 24598. | -25.8 | -40.6 | 20. | 323.7 | 22.7 |
| 350.0 | 27748. | -31.9 | -47.6 | 20. | 324.5 | 18.0 |
| 300.0 | 31253. | -41.0 | -63.2 | 7.** | 330.0 | 18.4 |
| 250.0 | 35243. | -49.1 | 0. | -0.** | 323.9 | 28.5 |
| 200.0 | 39556. | -56.3 | 0. | -0.** | 291.2 | 54.3 |
| 175.0 | 42717. | -60.1 | 0. | -0.** | 290.5 | 68.5 |
| 150.0 | 45647. | -63.6 | 0. | -0.** | 287.9 | 65.1 |
| 125.0 | 49484. | -67.3 | 0. | -0.** | 286.9 | 59.6 |
| 100.0 | 53517. | -70.4 | 0. | -0.** | 280.8 | 44.2 |
| 80.0 | 56363. | -65.1 | 0. | -0.** | 293.2 | 36.3 |
| 70.0 | 61038. | -64.2 | 0. | -0.** | 305.7 | 27.3 |
| 60.0 | 64146. | -62.2 | 0. | -0.** | 300.1 | 20.6 |
| 50.0 | 67870. | -59.0 | 0. | -0.** | 303.1 | 11.6 |
| 40.0 | 72485. | -57.9 | 0. | -0.** | 324.6 | 5.4 |
| 30.0 | 78438. | -57.0 | 0. | -0.** | 298.5 | 5.0 |
| 25.0 | 82237. | -55.6 | 0. | -0.** | 326.1 | 7.7 |
| 20.0 | 86521. | -53.8 | 0. | -0.** | 333.7 | 8.1 |
| 15.0 | 93015. | -51.6 | 0. | -0.** | 293.8 | 23.0 |
| 10.0 | 101733. | -46.5 | 0. | -0.** | 287.3 | 25.6 |
| 7.0 | 109592. | -42.2 | 0. | -0.** | | |

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

NOT REPRODUCIBLE

STATION ALTITUDE 5969.00 FEET MSL
24 JUL 66 0900 HRS MDT
ASCENSION NO. 861

SIGNIFICANT LEVEL DATA
0759003905
WHITE SANDS SITE

WSM SITE COORDINATES
488580.00 FEET E
185045.00 FEET N

TAB. IX

| PRESSURE | GEOMETRIC | TEMPERATURE | REL. HUM. |
|-----------|-----------|-------------|-----------|
| MILLIBARS | ALTITUDE | AIR | PERCENT |
| MSL FEET | DEGREES | DEWPOINT | |
| | | CENTIGRADE | |
| 864.7 | 3989.0 | 14.5 | 39.0 |
| 847.0 | 5189.4 | 11.1 | 36.0 |
| 833.0 | 5648.7 | 14.5 | 27.0 |
| 738.0 | 8973.1 | 9.1 | 24.0 |
| 663.0 | 11851.7 | 2.3 | 24.0 |
| 624.0 | 13454.4 | 0.3 | 20.0 |
| 572.0 | 15727.5 | -4.1 | 18.0 |
| 515.0 | 18222.9 | -9.3 | 17.0 |
| 472.0 | 20606.4 | -15.7 | 28.0 |
| 434.0 | 22672.3 | -19.7 | 23.0 |
| 378.0 | 25994.8 | -27.4 | 18.0 |
| 342.0 | 28335.3 | -33.6 | 19.0 |
| 249.0 | 35398.8 | -50.9 | -0. ** |
| 241.0 | 36099.0 | 0. | -0. ** |
| 224.0 | 37656.3 | 0. | -0. ** |
| 146.0 | 46485.3 | -64.6 | -0. ** |
| 138.0 | 47617.3 | -65.6 | -0. ** |
| 100.0 | 54089.8 | -64.5 | -0. ** |
| 70.0 | 61265.3 | -65.4 | -0. ** |
| 57.0 | 65473.8 | -57.2 | -0. ** |
| 38.0 | 73906.4 | -59.1 | -0. ** |
| 33.0 | 75865.3 | -53.9 | -0. ** |
| 27.0 | 81110.3 | -55.5 | -0. ** |
| 23.0 | 84514.5 | -52.5 | -0. ** |
| 16.0 | 85765.4 | -51.7 | -0. ** |
| 10.0 | 102551.0 | -45.9 | -0. ** |
| 6.5 | 112190.0 | -39.4 | -0. ** |

** RELATIVE HUMIDITY NOT SUPPLIED. ZERO VALUE ASSUMED FOR COMPUTATIONS.

STATION ALTITUDE 2909.00 FEET MSL
 22 OCT. 68
 ASCENSION NO. 861
 UPPER AIR DATA
 0759000909
 WHITE SANDS SITE
 WSTM SITE COORDINATES
 48880.00 FEET E
 185045.00 FEET N

TABLE X

| GEOMETRIC ALTITUDE MSL FEET | PRESSURE MILLIBARS | TEMPERATURE AIR DEGREES | TEMPERATURE DEWPOINT CENTIGRADE | REL. HUM. PERCENT | DENSITY GM/CUBIC METER | SPEED OF SOUND KNOTS | WIND DATA DIRECTION DEGREES (TN) | SPEED KNOTS | INDEX OF REFRACTION |
|--------------------------------|-----------------------|----------------------------|---------------------------------------|----------------------|------------------------------|----------------------------|--|----------------|---------------------------|
| 3589.0 | 864.7 | 14.5 | 0.7 | 39.0 | 1068.6 | 661.3 | 60.0 | 11.1 | 1.000268 |
| 4000.0 | 884.3 | 14.5 | 0.7 | 39.0 | 1068.3 | 661.3 | 59.7 | 11.2 | 1.000267 |
| 4500.0 | 868.5 | 13.1 | -1.0 | 37.7 | 1054.6 | 659.5 | 47.0 | 11.3 | 1.000261 |
| 5000.0 | 852.6 | 11.6 | -2.8 | 36.8 | 1041.1 | 657.8 | 34.3 | 11.4 | 1.000255 |
| 5500.0 | 837.5 | 13.4 | -3.9 | 29.9 | 1016.2 | 659.8 | 21.6 | 11.5 | 1.000240 |
| 6000.0 | 822.4 | 13.9 | -4.5 | 26.7 | 996.2 | 660.4 | 6.9 | 10.3 | 1.000241 |
| 6500.0 | 807.6 | 13.1 | -5.5 | 26.2 | 981.1 | 659.4 | 10.4 | 8.7 | 1.000237 |
| 7000.0 | 793.0 | 12.3 | -6.4 | 25.8 | 966.2 | 658.4 | 16.5 | 8.4 | 1.000232 |
| 7500.0 | 778.7 | 11.5 | -7.7 | 25.5 | 951.6 | 657.5 | 20.3 | 8.1 | 1.000228 |
| 8000.0 | 764.4 | 10.7 | -8.6 | 24.9 | 937.1 | 656.5 | 21.4 | 7.8 | 1.000224 |
| 8500.0 | 750.2 | 9.9 | -9.6 | 24.4 | 922.9 | 655.5 | 18.7 | 7.5 | 1.000220 |
| 9000.0 | 737.3 | 9.0 | -10.5 | 24.0 | 909.0 | 654.6 | 0.6 | 6.3 | 1.000216 |
| 9500.0 | 723.7 | 7.5 | -11.5 | 24.0 | 896.1 | 653.2 | 353.6 | 5.3 | 1.000212 |
| 10000.0 | 710.3 | 6.7 | -12.5 | 24.0 | 883.3 | 651.0 | 328.1 | 5.0 | 1.000208 |
| 10500.0 | 697.2 | 5.5 | -13.5 | 24.0 | 870.8 | 650.4 | 311.2 | 5.5 | 1.000203 |
| 11000.0 | 684.4 | 4.1 | -14.5 | 24.0 | 858.4 | 649.0 | 301.1 | 6.7 | 1.000201 |
| 11500.0 | 671.7 | 3.1 | -15.5 | 24.0 | 846.3 | 647.5 | 299.7 | 7.4 | 1.000194 |
| 12000.0 | 659.2 | 2.1 | -16.6 | 23.6 | 833.7 | 646.3 | 299.6 | 0.0 | 1.000194 |
| 12500.0 | 646.9 | 1.2 | -17.8 | 22.4 | 820.0 | 645.1 | 300.5 | 0.7 | 1.000190 |
| 13000.0 | 634.8 | 0.9 | -19.0 | 21.1 | 806.5 | 644.0 | 303.3 | 10.0 | 1.000187 |
| 13500.0 | 622.9 | 0.2 | -20.2 | 20.0 | 793.8 | 644.0 | 307.5 | 11.6 | 1.000183 |
| 14000.0 | 611.1 | -0.0 | -21.3 | 19.3 | 781.1 | 642.9 | 307.2 | 14.3 | 1.000180 |
| 14500.0 | 599.5 | -1.7 | -22.3 | 19.1 | 769.1 | 641.7 | 306.6 | 16.8 | 1.000177 |
| 15000.0 | 588.2 | -2.7 | -23.4 | 18.6 | 757.2 | 640.5 | 305.9 | 18.3 | 1.000173 |
| 15500.0 | 577.0 | -3.7 | -24.5 | 18.2 | 745.6 | 639.4 | 305.8 | 19.3 | 1.000170 |
| 16000.0 | 566.0 | -4.7 | -25.5 | 17.9 | 734.1 | 638.2 | 306.1 | 19.9 | 1.000168 |
| 16500.0 | 555.0 | -5.7 | -26.5 | 17.7 | 722.7 | 636.9 | 304.9 | 20.2 | 1.000165 |
| 17000.0 | 544.3 | -6.4 | -27.5 | 17.5 | 711.6 | 635.7 | 312.1 | 20.4 | 1.000162 |
| 17500.0 | 533.8 | -7.8 | -28.5 | 17.3 | 700.6 | 634.4 | 316.0 | 21.1 | 1.000159 |
| 18000.0 | 523.5 | -6.8 | -29.5 | 17.1 | 689.8 | 633.2 | 319.6 | 21.6 | 1.000157 |

NOT REPRODUCIBLE

STATION ALTITUDE 3949.00 FEET MSL
22 OCT. 68 0900 HRS PDT
ASCENSION NO. 861

UPPER AIR DATA
0754003905
WHITE SANDS SITE

WSTN SITE COORDINATES
488830.00 FEET E
185045.00 FEET N

TABLE X (CONT)

| GEOMETRIC ALTITUDE MSL FEET | PRESSURE MILLIBARS | TEMPERATURE AIR DEGREES | | REL. HUM. PERCENT | DENSITY GM/CM ³ METER | SPEED OF SOUND KNOTS | WIND DATA | | INDEX OF REFRACTION |
|-----------------------------------|-----------------------|----------------------------|----------|----------------------|--|----------------------------|---------------------------|----------------|---------------------------|
| | | TEMP | DEWPOINT | | | | DIRECTION DEGREES (VN) | SPEED KNOTS | |
| 18500.0 | 513.3 | -10.0 | -29.8 | 18.3 | 079.5 | 631.7 | 322.6 | 32.1 | 1.000134 |
| 19000.0 | 503.2 | -11.4 | -29.7 | 20.6 | 069.5 | 630.1 | 324.9 | 32.6 | 1.000132 |
| 19500.0 | 493.3 | -12.7 | -29.7 | 22.9 | 059.7 | 628.5 | 326.4 | 23.3 | 1.000130 |
| 20000.0 | 483.5 | -14.1 | -25.8 | 25.2 | 050.0 | 626.9 | 326.7 | 24.2 | 1.000140 |
| 20500.0 | 474.0 | -15.5 | -20.1 | 27.5 | 040.5 | 625.3 | 325.6 | 25.6 | 1.000146 |
| 21000.0 | 464.5 | -16.5 | -11.2 | 27.0 | 030.3 | 624.0 | 324.7 | 26.6 | 1.000143 |
| 21500.0 | 455.2 | -17.4 | -32.5 | 25.8 | 020.0 | 622.8 | 324.1 | 27.3 | 1.000140 |
| 22000.0 | 446.0 | -18.4 | -33.4 | 24.6 | 009.8 | 621.6 | 323.3 | 27.2 | 1.000130 |
| 22500.0 | 437.0 | -19.4 | -35.2 | 23.4 | 009.9 | 620.4 | 322.5 | 26.9 | 1.000135 |
| 23000.0 | 428.1 | -20.5 | -36.5 | 22.5 | 000.2 | 619.0 | 321.8 | 25.1 | 1.000133 |
| 23500.0 | 419.3 | -21.6 | -37.9 | 21.8 | 000.7 | 617.6 | 321.1 | 23.5 | 1.000131 |
| 24000.0 | 410.7 | -22.8 | -39.2 | 21.0 | 001.4 | 616.2 | 320.4 | 22.0 | 1.000128 |
| 24500.0 | 402.2 | -23.9 | -40.5 | 20.2 | 002.9 | 614.7 | 319.2 | 20.7 | 1.000126 |
| 25000.0 | 394.0 | -25.1 | -41.5 | 19.5 | 003.3 | 613.3 | 317.5 | 19.3 | 1.000124 |
| 25500.0 | 385.9 | -26.5 | -43.2 | 18.7 | 004.4 | 611.9 | 317.5 | 18.3 | 1.000122 |
| 26000.0 | 377.9 | -27.4 | -44.6 | 18.0 | 005.6 | 610.4 | 318.4 | 17.3 | 1.000120 |
| 26500.0 | 369.9 | -28.7 | -45.6 | 18.2 | 007.3 | 608.6 | 317.9 | 17.0 | 1.000118 |
| 27000.0 | 362.1 | -30.1 | -46.6 | 18.4 | 008.9 | 607.1 | 317.0 | 16.7 | 1.000116 |
| 27500.0 | 354.4 | -31.4 | -47.7 | 18.6 | 010.8 | 605.3 | 317.3 | 16.3 | 1.000114 |
| 28000.0 | 346.9 | -32.7 | -48.7 | 18.9 | 002.7 | 603.6 | 317.7 | 16.4 | 1.000112 |
| 28500.0 | 339.5 | -34.0 | -49.9 | 18.6** | 004.6 | 602.2 | 318.0 | 16.6 | 1.000111 |
| 29000.0 | 331.9 | -35.2 | -51.6 | 17.2** | 006.1 | 600.6 | 318.3 | 16.7 | 1.000109 |
| 29500.0 | 324.6 | -36.5 | -53.4 | 15.9** | 007.7 | 599.1 | 319.3 | 16.8 | 1.000107 |
| 30000.0 | 317.4 | -37.7 | -55.1 | 14.5** | 009.6 | 597.5 | 320.9 | 16.9 | 1.000109 |
| 30500.0 | 310.3 | -38.9 | -56.9 | 13.2** | 011.3 | 596.0 | 323.1 | 17.0 | 1.000103 |
| 31000.0 | 303.4 | -40.1 | -58.8 | 11.8** | 003.6 | 594.4 | 326.0 | 17.1 | 1.000101 |
| 31500.0 | 296.7 | -41.4 | -60.7 | 10.5** | 005.9 | 592.8 | 330.8 | 17.1 | 1.000099 |
| 32000.0 | 290.1 | -42.6 | -62.8 | 9.1** | 008.3 | 591.3 | 335.4 | 17.2 | 1.000098 |
| 32500.0 | 283.6 | -43.8 | -64.9 | 7.8** | 000.9 | 589.7 | 339.6 | 17.4 | 1.000096 |
| 33000.0 | 277.3 | -45.0 | -67.3 | 6.5** | 002.6 | 588.1 | 343.7 | 17.7 | 1.000094 |

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

UPPER AIR DATA
07590003905
WHITE SANDS SITE

STATION ALTITUDE 3989.00 FEET MSL
22 OCT. 68
ASCENSION NO. 861

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE X (Cont).

| GEOMETRIC ALTITUDE MSL FEET | PRESSURE MILLIBARS | TEMPERATURE | | REL. HUM. PERCENT | DENSITY GM/CUBIC METER | SPEED OF SOUND | | WIND DATA | | INDEX OF REFRACTION |
|-----------------------------------|-----------------------|----------------|------------------------|----------------------|------------------------------|-------------------|-------|--------------------------|----------------|---------------------------|
| | | AIR DEGREES | DEWPOINT CENTIGRADE | | | KNOTS | KNOTS | DIRECTION DEGREES (T) | SPEED KNOTS | |
| 33500.0 | 271.2 | -46.2 | -69.8 | 5.1** | 416.4 | 586.5 | 347.6 | 18.4 | 1.000093 | |
| 34000.0 | 265.2 | -47.5 | -72.8 | 3.8** | 409.4 | 584.9 | 349.4 | 19.0 | 1.000091 | |
| 34500.0 | 259.3 | -48.7 | -76.6 | 2.4** | 402.4 | 583.4 | 346.7 | 19.5 | 1.000090 | |
| 35000.0 | 253.5 | -49.9 | -82.5 | 1.1** | 395.7 | 581.8 | 341.6 | 20.1 | 1.000088 | |
| 35500.0 | 247.8 | -50.9 | 0. | -0. ** | 388.5 | 580.5 | 331.0 | 21.2 | 1.000087 | |
| 36000.0 | 242.1 | -50.8 | 0. | -0. ** | 379.6 | 580.6 | 320.3 | 22.5 | 1.000084 | |
| 36500.0 | 236.5 | -51.6 | 0. | -0. ** | 372.0 | 579.5 | 309.5 | 24.5 | 1.000083 | |
| 37000.0 | 231.0 | -52.7 | 0. | -0. ** | 365.1 | 578.1 | 299.5 | 26.7 | 1.000081 | |
| 37500.0 | 225.7 | -53.8 | 0. | -0. ** | 358.4 | 576.7 | 293.4 | 30.1 | 1.000080 | |
| 38000.0 | 220.3 | -54.5 | 0. | -0. ** | 351.1 | 575.8 | 288.7 | 33.6 | 1.000078 | |
| 38500.0 | 215.0 | -55.1 | 0. | -0. ** | 343.6 | 575.0 | 290.0 | 37.4 | 1.000077 | |
| 39000.0 | 209.9 | -55.7 | 0. | -0. ** | 336.3 | 574.2 | 291.4 | 41.2 | 1.000075 | |
| 39500.0 | 204.8 | -56.3 | 0. | -0. ** | 329.1 | 573.4 | 293.5 | 44.9 | 1.000073 | |
| 40000.0 | 199.9 | -56.9 | 0. | -0. ** | 322.1 | 572.6 | 295.5 | 48.5 | 1.000072 | |
| 40500.0 | 195.2 | -57.5 | 0. | -0. ** | 315.3 | 571.8 | 296.0 | 50.8 | 1.000070 | |
| 41000.0 | 190.5 | -58.1 | 0. | -0. ** | 308.6 | 571.0 | 296.6 | 53.1 | 1.000069 | |
| 41500.0 | 185.9 | -58.7 | 0. | -0. ** | 302.0 | 570.2 | 296.3 | 54.3 | 1.000067 | |
| 42000.0 | 181.5 | -59.3 | 0. | -0. ** | 295.6 | 569.5 | 295.9 | 55.3 | 1.000066 | |
| 42500.0 | 177.1 | -59.9 | 0. | -0. ** | 289.3 | 568.7 | 294.9 | 55.9 | 1.000064 | |
| 43000.0 | 172.9 | -60.5 | 0. | -0. ** | 283.2 | 567.9 | 293.7 | 56.4 | 1.000063 | |
| 43500.0 | 168.7 | -61.0 | 0. | -0. ** | 277.2 | 567.1 | 292.8 | 57.1 | 1.000062 | |
| 44000.0 | 164.7 | -61.6 | 0. | -0. ** | 271.3 | 566.3 | 292.3 | 58.0 | 1.000060 | |
| 44500.0 | 160.8 | -62.2 | 0. | -0. ** | 265.6 | 565.5 | 291.2 | 59.0 | 1.000059 | |
| 45000.0 | 156.9 | -62.8 | 0. | -0. ** | 259.9 | 564.7 | 290.4 | 59.5 | 1.000058 | |
| 45500.0 | 153.1 | -63.4 | 0. | -0. ** | 254.4 | 563.9 | 289.2 | 60.1 | 1.000057 | |
| 46000.0 | 149.5 | -64.0 | 0. | -0. ** | 249.0 | 563.1 | 288.1 | 60.5 | 1.000055 | |
| 46500.0 | 145.9 | -64.6 | 0. | -0. ** | 243.8 | 562.3 | 286.9 | 60.9 | 1.000054 | |
| 47000.0 | 142.3 | -65.1 | 0. | -0. ** | 238.3 | 561.7 | 287.2 | 60.5 | 1.000053 | |
| 47500.0 | 138.8 | -65.5 | 0. | -0. ** | 232.9 | 561.1 | 287.5 | 60.0 | 1.000052 | |
| 48000.0 | 135.4 | -65.5 | 0. | -0. ** | 227.2 | 561.1 | 288.1 | 58.4 | 1.000051 | |

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

NOT REPRODUCIBLE
VOLUME

STATION ALTITUDE 3969.00 FEET MSL
22 OCT. 68
ASCENSION NO. 861

UPPER AIR DATA
0759003905
WHITE SANDS SITE

WSTM SITE COORDINATES
488580.00 FEET E
185045.00 FEET N

TABLE X (Cont.)

| GEOMETRIC ALTITUDE MSL FEET | PRESSURE MILLIBARS | TEMPERATURE | | REL. HUM. PERCENT | DENSITY GM/CM ³ METER | SPEED OF SOUND KNOTS | WIND DATA | | INDEX OF REFRACTION |
|-----------------------------------|-----------------------|------------------------------|------------------------|----------------------|--|----------------------------|---------------------------|----------------|---------------------------|
| | | AIR DEGREES CENTIGRADE | DEWPOINT CENTIGRADE | | | | DIRECTION DEGREES (TN) | SPEED KNOTS | |
| 48500.0 | 132.1 | -65.4 | 0. | -0. | 221.5 | 561.2 | 288.9 | 56.4 | 1.0000049 |
| 49000.0 | 128.6 | -65.4 | 0. | -0. | 216.0 | 561.3 | 290.0 | 54.6 | 1.0000048 |
| 49500.0 | 125.7 | -65.3 | 0. | -0. | 210.6 | 561.4 | 291.4 | 53.2 | 1.0000047 |
| 50000.0 | 122.5 | -65.2 | 0. | -0. | 205.4 | 561.5 | 292.9 | 51.8 | 1.0000046 |
| 50500.0 | 119.6 | -65.1 | 0. | -0. | 200.2 | 561.6 | 293.2 | 50.1 | 1.0000045 |
| 51000.0 | 116.6 | -65.0 | 0. | -0. | 195.2 | 561.7 | 293.5 | 48.5 | 1.0000043 |
| 51500.0 | 113.8 | -64.9 | 0. | -0. | 190.4 | 561.9 | 293.6 | 47.2 | 1.0000042 |
| 52000.0 | 111.0 | -64.9 | 0. | -0. | 185.6 | 562.0 | 293.6 | 46.2 | 1.0000041 |
| 52500.0 | 108.2 | -64.8 | 0. | -0. | 181.0 | 562.1 | 293.6 | 45.2 | 1.0000040 |
| 53000.0 | 105.6 | -64.7 | 0. | -0. | 176.4 | 562.2 | 293.6 | 44.0 | 1.0000039 |
| 53500.0 | 103.0 | -64.6 | 0. | -0. | 172.0 | 562.3 | 293.7 | 42.8 | 1.0000038 |
| 54000.0 | 100.4 | -64.5 | 0. | -0. | 167.7 | 562.4 | 294.3 | 41.9 | 1.0000037 |
| 54500.0 | 98.0 | -64.6 | 0. | -0. | 163.7 | 562.4 | 295.0 | 41.0 | 1.0000036 |
| 55000.0 | 95.6 | -64.6 | 0. | -0. | 159.7 | 562.3 | 295.8 | 40.0 | 1.0000036 |
| 55500.0 | 93.2 | -64.7 | 0. | -0. | 155.8 | 562.2 | 296.6 | 38.7 | 1.0000035 |
| 56000.0 | 90.9 | -64.7 | 0. | -0. | 152.0 | 562.1 | 297.5 | 37.3 | 1.0000034 |
| 56500.0 | 88.7 | -64.8 | 0. | -0. | 148.3 | 562.0 | 297.7 | 36.3 | 1.0000033 |
| 57000.0 | 86.5 | -64.9 | 0. | -0. | 144.7 | 562.0 | 297.7 | 35.5 | 1.0000032 |
| 57500.0 | 84.4 | -64.9 | 0. | -0. | 141.2 | 561.9 | 297.9 | 34.4 | 1.0000031 |
| 58000.0 | 82.3 | -65.0 | 0. | -0. | 137.8 | 561.8 | 298.1 | 33.7 | 1.0000031 |
| 58500.0 | 80.3 | -65.1 | 0. | -0. | 134.5 | 561.7 | 298.4 | 32.9 | 1.0000030 |
| 59000.0 | 78.3 | -65.1 | 0. | -0. | 131.2 | 561.6 | 298.8 | 32.6 | 1.0000029 |
| 59500.0 | 76.4 | -65.2 | 0. | -0. | 128.0 | 561.5 | 299.3 | 32.3 | 1.0000029 |
| 60000.0 | 74.5 | -65.2 | 0. | -0. | 124.9 | 561.4 | 300.2 | 32.3 | 1.0000028 |
| 60500.0 | 72.7 | -65.3 | 0. | -0. | 121.9 | 561.4 | 302.0 | 32.5 | 1.0000027 |
| 61000.0 | 70.9 | -65.4 | 0. | -0. | 118.9 | 561.3 | 303.8 | 32.8 | 1.0000026 |
| 61500.0 | 69.2 | -64.5 | 0. | -0. | 115.8 | 561.9 | 303.9 | 33.4 | 1.0000026 |
| 62000.0 | 67.5 | -64.0 | 0. | -0. | 112.5 | 563.2 | 303.9 | 34.0 | 1.0000025 |
| 62500.0 | 65.9 | -63.0 | 0. | -0. | 109.3 | 564.5 | 303.4 | 34.7 | 1.0000024 |
| 63000.0 | 64.3 | -62.0 | 0. | -0. | 106.1 | 565.8 | 301.8 | 35.3 | 1.0000024 |

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET MSL

22 OCT. 68

ASCENSION NJ. 861

UPPER AIR DATA

0759003905

WHITE SANDS SITE

WSTM SITE COORDINATES

485580.00FEET E

185045.00FEET N

TABLE X (Cont)

| GEOMETRIC ALTITUDE MSL FEET | PRESSURE MILLIBARS | TEMPERATURE AIR DEGREES CENITGRADE | REL. HUM. PERCENT | DENSITY GM/CUBIC METER | SPEED OF SOUND KNOTS | WIND DATA DIRECTION DEGREES(TN) | SPEED KNOTS | INDEX OF REFRACTION |
|--------------------------------|-----------------------|--|----------------------|------------------------------|----------------------------|---------------------------------------|----------------|---------------------------|
| 65500.0 | 62.8 | -61.0 | -0. | 103.1 | 567.2 | 300.2 | 35.9 | 1.000029 |
| 64000.0 | 61.3 | -60.1 | -0. | 100.2 | 568.4 | 298.9 | 36.4 | 1.000022 |
| 64200.0 | 59.8 | -59.1 | -0. | 97.3 | 569.7 | 297.8 | 36.6 | 1.000022 |
| 65000.0 | 58.2 | -58.1 | -0. | 94.5 | 571.0 | 296.8 | 36.9 | 1.000021 |
| 65200.0 | 56.9 | -57.2 | -0. | 91.9 | 572.2 | 297.0 | 36.4 | 1.000020 |
| 66000.0 | 55.6 | -57.3 | -0. | 89.7 | 572.0 | 297.8 | 35.5 | 2.000020 |
| 66500.0 | 54.3 | -57.4 | -0. | 87.6 | 571.9 | 298.7 | 34.7 | 1.000020 |
| 67000.0 | 53.0 | -57.5 | -0. | 85.6 | 571.7 | 300.0 | 32.6 | 1.000019 |
| 67500.0 | 51.7 | -57.7 | -0. | 83.6 | 571.6 | 301.4 | 30.1 | 1.000019 |
| 68000.0 | 50.5 | -57.6 | -0. | 81.7 | 571.4 | 302.8 | 27.7 | 1.000018 |
| 68500.0 | 49.3 | -57.9 | -0. | 79.8 | 571.3 | 304.6 | 24.5 | 1.000018 |
| 69000.0 | 48.1 | -58.0 | -0. | 77.9 | 571.1 | 306.3 | 21.4 | 1.000017 |
| 69500.0 | 47.0 | -58.1 | -0. | 76.1 | 571.0 | 307.8 | 18.2 | 1.000017 |
| 70000.0 | 45.9 | -58.2 | -0. | 74.3 | 570.8 | 306.7 | 14.8 | 1.000017 |
| 70500.0 | 44.8 | -58.3 | -0. | 72.6 | 570.7 | 305.7 | 11.5 | 1.000016 |
| 71000.0 | 43.7 | -58.4 | -0. | 70.9 | 570.5 | 304.9 | 8.9 | 1.000016 |
| 71500.0 | 42.7 | -58.6 | -0. | 69.3 | 570.4 | 304.9 | 7.8 | 1.000015 |
| 72000.0 | 41.6 | -58.7 | -0. | 67.7 | 570.3 | 304.9 | 6.9 | 1.000015 |
| 72500.0 | 40.7 | -58.8 | -0. | 66.1 | 570.1 | 302.6 | 6.0 | 1.000015 |
| 73000.0 | 39.7 | -58.9 | -0. | 64.5 | 570.0 | 297.8 | 5.3 | 1.000014 |
| 73500.0 | 38.7 | -59.0 | -0. | 63.0 | 569.8 | 293.0 | 4.5 | 1.000014 |
| 74000.0 | 37.8 | -59.9 | -0. | 61.5 | 569.9 | 289.0 | 5.7 | 1.000014 |
| 74500.0 | 36.9 | -58.1 | -0. | 59.8 | 571.1 | 285.3 | 7.7 | 1.000013 |
| 75000.0 | 36.1 | -57.2 | -0. | 58.2 | 572.2 | 281.7 | 7.7 | 1.000013 |
| 75500.0 | 35.2 | -56.3 | -0. | 56.6 | 573.4 | 280.2 | 10.4 | 1.000013 |
| 76000.0 | 34.4 | -55.4 | -0. | 55.0 | 574.6 | 279.0 | 10.8 | 1.000012 |
| 76500.0 | 33.6 | -54.5 | -0. | 53.5 | 575.7 | 277.7 | 11.1 | 1.000012 |
| 77000.0 | 32.8 | -54.0 | -0. | 52.1 | 576.5 | 269.3 | 9.0 | 1.000012 |
| 77500.0 | 32.0 | -54.1 | -0. | 50.9 | 576.2 | 260.9 | 6.9 | 1.000011 |
| 78000.0 | 31.3 | -54.5 | -0. | 49.8 | 576.0 | 247.1 | 5.3 | 1.000011 |

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

UPPER AIR DATA
0759003905
WHITE SANDS SITE

STATION ALTITUDE 3989.00 FEET MSL
22 OCT. 68
ASCENSION NO. 861

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE X (Cont)

| GEOMETRIC ALTITUDE MSL FEET | PRESSURE MILLIBARS | TEMPERATURE | | REL. HUM. PERCENT | DENSITY GM/CUBIC METER | SPEED OF SOUND KNOTS | WIND DATA | | INDEX OF REFRACTION |
|-----------------------------------|-----------------------|------------------------------|------------------------|----------------------|------------------------------|----------------------------|--------------------------|----------------|---------------------------|
| | | AIR DEGREES CENTIGRADE | DEWPOINT CENTIGRADE | | | | DIRECTION DEGREES(TN) | SPEED KNOTS | |
| 78500.0 | 30.5 | -54.5 | 0. | -0. ** | 48.7 | 575.7 | 202.3 | 6.0 | 1.000011 |
| 79000.0 | 29.8 | -54.7 | 0. | -0. ** | 47.6 | 575.5 | 157.4 | 6.7 | 1.000011 |
| 79500.0 | 29.1 | -54.9 | 0. | -0. ** | 46.5 | 575.2 | 122.2 | 7.5 | 1.000010 |
| 80000.0 | 28.5 | -55.1 | 0. | -0. ** | 45.5 | 575.0 | 113.8 | 8.3 | 1.000010 |
| 80500.0 | 27.8 | -55.3 | 0. | -0. ** | 44.4 | 574.8 | 105.3 | 9.2 | 1.000010 |
| 81000.0 | 27.1 | -55.5 | 0. | -0. ** | 43.4 | 574.5 | 95.4 | 9.0 | 1.000010 |
| 81500.0 | 26.5 | -55.2 | 0. | -0. ** | 42.4 | 574.9 | 83.2 | 7.3 | 1.000009 |
| 82000.0 | 25.9 | -54.7 | 0. | -0. ** | 41.3 | 575.5 | 71.0 | 5.5 | 1.000009 |
| 82500.0 | 25.3 | -54.3 | 0. | -0. ** | 40.3 | 576.1 | 53.5 | 4.7 | 1.000009 |
| 83000.0 | 24.7 | -53.8 | 0. | -0. ** | 39.2 | 576.6 | 30.6 | 4.8 | 1.000009 |
| 83500.0 | 24.1 | -53.4 | 0. | -0. ** | 38.3 | 577.2 | 7.6 | 4.3 | 1.000009 |
| 84000.0 | 23.6 | -53.0 | 0. | -0. ** | 37.3 | 577.8 | 357.3 | 4.8 | 1.000008 |
| 84500.0 | 23.0 | -52.5 | 0. | -0. ** | 36.3 | 578.4 | 355.2 | 4.5 | 1.000008 |
| 85000.0 | 22.5 | -52.4 | 0. | -0. ** | 35.5 | 578.5 | 353.1 | 4.2 | 1.000008 |
| 85500.0 | 22.0 | -52.3 | 0. | -0. ** | 34.7 | 578.6 | 347.9 | 5.2 | 1.000008 |
| 86000.0 | 21.5 | -52.3 | 0. | -0. ** | 33.8 | 578.7 | 341.2 | 6.7 | 1.000008 |
| 86500.0 | 21.0 | -52.2 | 0. | -0. ** | 33.1 | 578.8 | 334.6 | 8.3 | 1.000007 |
| 87000.0 | 20.5 | -52.1 | 0. | -0. ** | 32.3 | 578.9 | 329.2 | 10.1 | 1.000007 |
| 87500.0 | 20.0 | -52.0 | 0. | -0. ** | 31.5 | 579.0 | 324.9 | 12.1 | 1.000007 |
| 88000.0 | 19.5 | -52.0 | 0. | -0. ** | 30.8 | 579.1 | 320.6 | 14.1 | 1.000007 |
| 88500.0 | 19.1 | -51.9 | 0. | -0. ** | 30.1 | 579.2 | 316.3 | 16.1 | 1.000007 |
| 89000.0 | 18.7 | -51.8 | 0. | -0. ** | 29.4 | 579.3 | 314.0 | 17.4 | 1.000007 |
| 89500.0 | 18.2 | -51.7 | 0. | -0. ** | 28.7 | 579.4 | 311.9 | 18.8 | 1.000006 |
| 90000.0 | 17.8 | -51.6 | 0. | -0. ** | 28.0 | 579.6 | 309.8 | 20.1 | 1.000006 |
| 90500.0 | 17.4 | -51.4 | 0. | -0. ** | 27.3 | 579.9 | 307.8 | 21.4 | 1.000006 |
| 91000.0 | 17.0 | -51.1 | 0. | -0. ** | 26.7 | 580.2 | 306.5 | 22.4 | 1.000006 |
| 91500.0 | 16.6 | -50.9 | 0. | -0. ** | 26.1 | 580.5 | 305.2 | 23.5 | 1.000006 |
| 92000.0 | 16.2 | -50.7 | 0. | -0. ** | 25.4 | 580.8 | 303.9 | 24.6 | 1.000006 |
| 92500.0 | 15.9 | -50.5 | 0. | -0. ** | 24.8 | 581.1 | 302.7 | 25.5 | 1.000006 |
| 93000.0 | 15.5 | -50.2 | 0. | -0. ** | 24.2 | 581.4 | 302.2 | 26.1 | 1.000005 |

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3987.00 FEET MSL
22 OCT. 68
ASCENSION NO. 861

UPPER AIR DATA
0759C03905
WHITE SANDS SITE

WSTM SITE COORDINATES
488°80.00FEET E
185045.00FEET N

TABLE X (Cont)

| GEOMETRIC ALTITUDE MSL FEET | PRESSURE MILLIBARS | TEMPERATURE AIR DEGREES CENTIGRADE | REL. HUM. PERCENT | DENSITY GM/CUBIC METER | SPEED OF SOUND KNOTS | WIND DATA DIRECTION DEGREES(TN) | SPEED KNOTS | INDEX OF REFRACTION |
|-----------------------------------|-----------------------|---|----------------------|------------------------------|----------------------------|---------------------------------------|----------------|---------------------------|
| 93500.0 | 15.2 | -50.0 | -0. ** | 23.7 | 581.7 | 301.6 | 26.7 | 1.000005 |
| 94000.0 | 14.8 | -49.8 | -0. ** | 23.1 | 581.9 | 301.1 | 27.3 | 1.000005 |
| 94500.0 | 14.5 | -49.6 | -0. ** | 22.6 | 582.2 | 300.0 | 28.2 | 1.000005 |
| 95000.0 | 14.2 | -49.3 | -0. ** | 22.0 | 582.5 | 297.6 | 29.4 | 1.000005 |
| 95500.0 | 13.8 | -49.1 | -0. ** | 21.5 | 582.8 | 295.3 | 30.7 | 1.000005 |
| 96000.0 | 13.5 | -48.9 | -0. ** | 21.0 | 583.1 | 292.9 | 32.0 | 1.000005 |
| 96500.0 | 13.2 | -48.6 | -0. ** | 20.5 | 583.4 | 291.1 | 32.7 | 1.000005 |
| 97000.0 | 12.9 | -48.4 | -0. ** | 20.0 | 583.7 | 290.0 | 32.7 | 1.000004 |
| 97500.0 | 12.6 | -48.2 | -0. ** | 19.5 | 584.0 | 288.9 | 32.7 | 1.000004 |
| 98000.0 | 12.3 | -48.0 | -0. ** | 19.1 | 584.3 | 287.8 | 32.8 | 1.000004 |
| 98500.0 | 12.0 | -47.7 | -0. ** | 18.6 | 584.6 | 286.5 | 32.7 | 1.000004 |
| 99000.0 | 11.8 | -47.5 | -0. ** | 18.2 | 584.9 | 285.2 | 32.5 | 1.000004 |
| 99500.0 | 11.5 | -47.3 | -0. ** | 17.7 | 585.2 | 283.9 | 32.3 | 1.000004 |
| 100000.0 | 11.2 | -47.1 | -0. ** | 17.3 | 585.5 | 282.6 | 32.1 | 1.000004 |
| 100500.0 | 11.0 | -46.6 | -0. ** | 16.9 | 585.8 | 281.5 | 31.9 | 1.000004 |
| 101000.0 | 10.7 | -46.0 | -0. ** | 16.5 | 586.1 | 280.5 | 31.7 | 1.000004 |
| 101500.0 | 10.5 | -45.4 | -0. ** | 16.1 | 586.4 | 279.5 | 31.5 | 1.000004 |
| 102000.0 | 10.3 | -46.1 | -0. ** | 15.7 | 586.7 | 278.5 | 31.2 | 1.000004 |
| 102500.0 | 10.0 | -45.9 | -0. ** | 15.4 | 587.0 | 277.1 | 31.5 | 1.000003 |
| 103000.0 | 9.8 | -45.6 | -0. ** | 15.0 | 587.4 | 275.5 | 32.0 | 1.000003 |
| 103500.0 | 9.6 | -45.3 | -0. ** | 14.7 | 587.8 | 274.0 | 32.5 | 1.000003 |
| 104000.0 | 9.4 | -44.9 | -0. ** | 14.3 | 588.2 | 272.4 | 32.9 | 1.000003 |
| 104500.0 | 9.2 | -44.6 | -0. ** | 14.0 | 588.7 | 272.2 | 33.5 | 1.000003 |
| 105000.0 | 9.0 | -44.2 | -0. ** | 13.6 | 589.1 | 272.0 | 34.1 | 1.000003 |
| 105500.0 | 8.8 | -43.9 | -0. ** | 13.3 | 589.5 | 271.8 | 34.7 | 1.000003 |
| 106000.0 | 8.6 | -43.6 | -0. ** | 13.0 | 590.0 | 271.6 | 35.3 | 1.000003 |
| 106500.0 | 8.4 | -43.2 | -0. ** | 12.7 | 590.4 | 271.3 | 35.8 | 1.000003 |
| 107000.0 | 8.2 | -42.9 | -0. ** | 12.4 | 590.8 | 271.0 | 36.4 | 1.000003 |
| 107500.0 | 8.0 | -42.6 | -0. ** | 12.1 | 591.3 | 270.6 | 36.9 | 1.000003 |
| 108000.0 | 7.8 | -42.2 | -0. ** | 11.8 | 591.7 | 270.3 | 37.4 | 1.000003 |

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3909.00 FEET MSL
22 OCT. 68
ASCENSION NO. 821

UPPER AIR DATA
0759003905
WHITE SANDS SITE

TABLE X (Cont)

| GEOMETRIC ALTITUDE MSL FEET | PRESSURE MILLIBARS | TEMPERATURE AIR DEGREES DEWPOINT CENTIGRADE | REL. HUM. PERCENT | DENSITY GM/CUBIC METER | SPEED OF SOUND KNUTS | WIND DATA DIRECTION DEGREES(TN) SPEED KNUTS | INDEX OF REFRACTION |
|--------------------------------|-----------------------|--|----------------------|------------------------------|----------------------------|--|---------------------------|
| 108500.0 | 7.7 | -41.9 | -0. ** | 11.5 | 592.1 | | 1.000003 |
| 109000.0 | 7.5 | -41.0 | -0. ** | 11.3 | 592.6 | | 1.000003 |
| 109500.0 | 7.3 | -41.2 | -0. ** | 11.0 | 593.0 | | 1.000002 |
| 110000.0 | 7.2 | -40.5 | -0. ** | 10.8 | 593.4 | | 1.000002 |
| 110500.0 | 7.0 | -40.5 | -0. ** | 10.5 | 593.9 | | 1.000002 |
| 111000.0 | 6.9 | -40.2 | -0. ** | 10.3 | 594.3 | | 1.000002 |
| 111500.0 | 6.7 | -39.5 | -0. ** | 10.0 | 594.7 | | 1.000002 |
| 112000.0 | 6.6 | -39.5 | -0. ** | 9.8 | 595.2 | | 1.000002 |

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3909.00 FEET MSL
22 OCT. 68
ASCENSION NO. 861

MANDATORY LEVELS
0759003905
WHITE SANDS SITE

WSTM SIVE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE XI

| PRESSURE GEOPOTENTIAL | | TEMPERATURE | | REL. HUM. PERCENT | WIND DATA | |
|-----------------------|---------|------------------------------|------------------------|----------------------|---------------------------|----------------|
| HILLIBARS | FEET | AIR DEGREES CENTIGRADE | DEWPOINT CENTIGRADE | | DIRECTION DEGREES (TN) | SPEED KNOTS |
| 850.0 | 5091. | 11.4 | -3.1 | 36. | 32.0 | 11.3 |
| 800.0 | 6763. | 12.7 | -6.3 | 26. | 13.7 | 9.4 |
| 750.0 | 8530. | 9.8 | -9.6 | 24. | 18.5 | 7.4 |
| 700.0 | 10396. | 5.7 | -13.3 | 24. | 313.3 | 5.3 |
| 650.0 | 12368. | 1.6 | -17.5 | 23. | 300.3 | 8.5 |
| 600.0 | 14472. | -1.7 | -22.3 | 19. | 306.6 | 16.8 |
| 550.0 | 16724. | -6.2 | -27.0 | 18. | 310.4 | 20.3 |
| 500.0 | 19146. | -11.8 | -29.7 | 21. | 325.4 | 22.8 |
| 450.0 | 21759. | -18.0 | -33.3 | 25. | 323.7 | 27.4 |
| 400.0 | 24614. | -24.2 | -40.9 | 20. | 318.7 | 20.3 |
| 350.0 | 27758. | -32.2 | -48.3 | 19. | 317.5 | 16.4 |
| 300.0 | 31264. | -40.7 | -59.8 | 11.** | 329.0 | 17.1 |
| 250.0 | 35249. | -50.7 | -91.3 | 0.** | 335.0 | 20.8 |
| 200.0 | 39954. | -56.9 | 0. | -0.** | 295.5 | 48.7 |
| 175.0 | 42708. | -60.2 | 0. | -0.** | 294.2 | 56.2 |
| 150.0 | 45836. | -63.9 | 0. | -0.** | 288.2 | 60.4 |
| 125.0 | 49480. | -65.3 | 0. | -0.** | 291.7 | 52.9 |
| 100.0 | 53946. | -64.5 | 0. | -0.** | 294.4 | 41.8 |
| 80.0 | 58414. | -65.1 | 0. | -0.** | 298.4 | 32.8 |
| 70.0 | 61082. | -65.4 | 0. | -0.** | 303.9 | 33.1 |
| 60.0 | 64205. | -59.2 | 0. | -0.** | 298.0 | 36.6 |
| 50.0 | 67980. | -57.8 | 0. | -0.** | 303.5 | 26.5 |
| 40.0 | 72587. | -58.9 | 0. | -0.** | 299.3 | 5.5 |
| 30.0 | 76584. | -54.7 | 0. | -0.** | 168.1 | 6.5 |
| 25.0 | 82407. | -51.1 | 0. | -0.** | 42.8 | 4.7 |
| 20.0 | 87136. | -52.0 | 0. | -0.** | 324.9 | 12.1 |
| 15.0 | 93272. | -49.9 | 0. | -0.** | 301.4 | 27.0 |
| 10.0 | 102049. | -45.9 | 0. | -0.** | 270.9 | 31.6 |
| 7.0 | 109930. | -40.5 | 0. | -0.** | | |

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

| RELEASE TIME (EST) | | SECOND-STAGE IMPACT DISPLACEMENT IN MILES DUE TO WIND | | | | | | | | | | AZI- MUTE (DEG- DEGS) | THEORETICAL IMPACT FROM LAUNCHER (IN MILES) | | |
|-----------------------|-------|---|------|-------------|------|--------------|------|-------|------|-------|-------|--------------------------------|---|-------|-----|
| | | TOTAL | | | | | | | | | | | | | |
| | | 11-216 FT | | 216-4000 FT | | 4000-6000 FT | | TOTAL | | | | | | | |
| RAWIE- SOURCE | PIRAL | N-S | E-W | N-S | E-W | N-S | E-W | N-S | E-W | N-S | E-W | | RANGE | N-S | E-W |
| 0630 | 0700 | 4.8M | 0.2E | 13.2N | 1.2W | 5.4M | 7.4W | 23.4M | 9.0W | 345.7 | 345.7 | 60.2 | 58.3N | 15.5W | |
| 0630 | 0730 | 1.7N | 0.0 | 11.7N | 1.1E | 5.4N | 7.4W | 18.8M | 6.3W | 346.6 | 346.6 | 55.2 | 53.7N | 12.8W | |
| 0630 | 0800 | 5.7N | 5.8E | 13.7N | 3.8E | 5.4M | 7.4W | 26.8M | 2.2E | 354.6 | 354.6 | 62.0 | 61.7N | 4.3W | |
| 0630 | 0815 | 8.7N | 8.0E | 11.9N | 5.1E | 5.4N | 7.4W | 26.0M | 5.7E | 359.3 | 359.3 | 60.9 | 60.9N | 0.2W | |
| 0630 | 0830 | 7.1N | 5.5E | 13.5N | 3.9E | 5.4M | 7.4W | 26.0M | 2.0E | 355.8 | 355.8 | 61.1 | 60.9N | 4.5W | |
| 0630 | 0840 | 8.7N | 7.0E | 14.9N | 4.0E | 5.4M | 7.4W | 29.0M | 3.6E | 357.4 | 357.4 | 70.0 | 63.9N | 2.9W | |
| 0630 | 0850 | 5.4N | 8.2E | 11.2N | 6.7E | 5.4N | 7.4W | 21.8M | 7.5E | 001.0 | 001.0 | 56.7 | 56.7N | 1.0E | |
| 0630 | 0900 | 8.7N | 6.6E | 14.3N | 4.9E | 5.4N | 7.4W | 28.4M | 4.1E | 357.8 | 357.8 | 63.3 | 63.3N | 2.4W | |
| 0900 | 0900 | 8.7N | 6.6E | 14.3N | 4.9E | 3.7N | 6.9W | 26.7M | 4.6E | 358.3 | 358.3 | 61.6 | 61.6N | 1.9W | |

| LAUNCHER SETTING (ELEVATION 80.0 DEGREES QE) | AZI- MUTE (DEG- REES) | MILES FROM LAUNCHER | | |
|--|--------------------------------|---------------------|-------|-------|
| | | RANGE | N-S | E-W |
| NO WIND IMPACT | 354.0 | 35.1 | 34.9N | 3.7W |
| PREDICTED SECOND-STAGE IMPACT | 349.5 | 35.6 | 34.9N | 6.5W |
| SECOND-STAGE IMPACT, SOVIN* | 357.0 | 61.4 | 61.3N | 3.2W |
| PREDICTED BOOSTER IMPACT | 350.2 | 65.9 | 65.0N | 11.3W |
| ACTUAL BOOSTER IMPACT | 018.0 | 1.4 | 1.3N | 0.4E |
| | N/A | N/A | N/A | N/A |

TABLE XII. IMPACT PREDICTION DATA
NEKE-HYDAC 9.5-68-5-604

*Sonic Observation of the Trajectory and Impact of Missiles.

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| 13. ABSTRACT | | | |
| <p>Meteorological data gathered for the launching of Nike-Hydac 9.5-68-5-604 are presented for the Defense Atomic Support Agency, Sub-task 905, and for ballistic studies. The data appear, along with calculated ballistic data, in tabular form. NR</p> | | | |

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1. Ballistics
2. Meteorology
3. Wind

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